

Back to Nature in Aquinas

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Perhaps the most famous achievement of Thomas Aquinas lies in his robust conception of nature and the natural world in the face of an uncompromising theology of grace and divine operation. As is well known, the Aristotelian conception of nature enables Aquinas to steer clear of both occasionalism and naturalism and to affirm the reality of secondary causes in the natural world.¹ Nevertheless, is nature itself to be understood as a secondary cause of cosmic events? A recent and prevalent answer is that Aquinas correctly understood that nature in Aristotle is not an efficient cause but a spontaneous source of regular, ‘agentless’ or ‘causeless’ changes in the mineral, vegetative, and animal world.² This position, in my view,

I wish to thank Lawrence Dewan for helpful comments and parallels, as well as Todd Inman for his research assistance.

1. For discussions of nature in Aquinas, see Jan Aertsen, *Nature and Creature: Thomas Aquinas's Way of Thought* (Leiden, 1988), pp. 278–310; J. I. Alcorta, “El concepto de naturaleza en Santo Tomás,” in *La filosofía della natura nel medioevo* (Milan, 1966), pp. 465–70; Anthony F. Beavers, “Motion, Mobility, and Method in Aristotle's *Physics*: Comments on *Physics* 2.1 192b20–24,” *Review of Metaphysics* 42 (1988): 357–74; Z. Bucher, “Die Natur als Ordnung bei Thomas von Aquin,” *Salzburger Jahrbuch für Philosophie* 19 (1974): 219–38; Santiago Fernández Burillo, “‘Motus naturalis’: La autonomía operativa del Ente Creado, según la mente de Santo Tomás de Aquino,” in *Atti del IX Congresso Tomistico Internazionale* (Vatican City, 1991), vol. 2, pp. 323–30; A. Ghisalberti, “La concezione della natura nel commento di Tommaso D'Aquino alla *Metafisica* di Aristotele,” *Rivista di filosofia neoscolastica* 66 (1974): 533–40; Helen S. Lang, *Aristotle's Physics and Its Medieval Varieties* (Albany, N.Y., 1992); M.-J. Nicolas, “L'Idée de nature dans la pensée de S. Thomas,” *Revue Thomiste* 74 (1974): 533–90; Raimundo Panikkar, *El concepto de naturaleza: Análisis histórico y metafísico de un concepto*, 2nd ed. (Madrid, 1972); José Petit Sullá, “La aportación tomista al concepto de naturaleza,” in *Atti del IX Congresso Tomistico*, vol. 2, pp. 261–66; Filippo Selvaggi, “Il concetto di natura in Aristotele e S. Tommaso,” in *Scritti in onore di Carlo Giacon*, ed. F. Battaglia et al. (Padua, 1972), pp. 259–76; Jakob Schneider, “Physik und Natur im Kommentar des Thomas von Aquin zur aristotelischen Metaphysik,” in *Mensch und Natur im Mittelalter* (Berlin, 1991), vol. 1, pp. 161–92.

2. Cf. Zev Bechler, *Aristotle's Theory of Actuality* (Albany, N.Y., 1995), p. 46: “natural motion [in Aristotle is] a new, third kind of motion, that is, neither caused by another nor by itself but rather uncaused motion.” For other articulations of an ‘agentless’ natural motion in Aristotle, see Mary Louise Gill, *Aristotle on Substance: The Paradox of Unity* (Princeton, N.J., 1989), pp. 237–40; Troy Organ, “Nature and Non-Nature in Aristotle,” *The Thomist* 39 (1975): 575–601, at 576.

remains an important corrective for those who see in all Aristotelian physics an animism or biologism. Still, the position as regards Aquinas veers too close to naturalism by failing to explain how all natural events, for him, are dependent on a cause of motion. Only a return to Aquinas's conception of nature itself will reveal this causal dependence.

The aforementioned position has been most forcefully articulated by James Weisheipl.³ In some nine articles and three books, Weisheipl has elaborated two main theses: first, that nature in Aristotelian philosophy is an intrinsic, dynamic principle that accounts for the spontaneous yet regular behavior displayed by the universe's bodies; second, that nature is nevertheless not an interior 'motor' or 'mover' producing such behavior after the model of a soul or a bodily organ, for example. In developing these theses, Weisheipl sought to counter certain commonplace evaluations of the natural philosophy inspired by Aristotle. According to one such evaluation, the dynamic conception of nature results from Aristotle's faulty *biologism* and can and should be separated from what is his abiding contribution, his metaphysics of static, hylomorphic essences.⁴ According

3. In addition to Weisheipl's works cited below, distinctive accounts of 'agent-less' motion in Aquinas can be found in James A. McWilliams, *Physics and Philosophy: A Study of Saint Thomas's Commentary on the Eight Books of Aristotle's Physics* (Washington, D.C., 1945), pp. 15–18; and William A. Wallace, "St. Thomas and the Pull of Gravity," in *From a Realist Point of View: Essays on the Philosophy of Science*, 2nd ed. (Lanham, Md., 1983), pp. 147–69, at 161 and n. 49; reprinted from *The McAuley Lectures 1963: Science and the Liberal Concept* (West Hartford, Conn., 1964), pp. 143–65. Weisheipl's account has its echoes in, for example, Sheilah O'Flynn Brennan, "ΦΥΣΙΣ: The Meaning of 'Nature' in the Aristotelian Philosophy of Nature," in *The Dignity of Science: Studies in the Philosophy of Science Presented to William Humbert Kane, O.P.*, ed. J. Weisheipl (River Forest, Ill., 1961), pp. 247–65, at 251–55; Antonio Moreno, "The Law of Inertia and the Principle *Quidquid movetur ab alio movetur*," *The Thomist* 38 (1974): 306–31, at 320–25.

4. See, for example, Etienne Gilson: "For a scholastic philosopher, as a matter of fact, physical bodies are endowed with forms from which they derive their movement and their properties; and . . . [form is a] genus which includes both the forms of inorganic beings and the forms or souls of organized beings. This explains the relative sterility of the scholastic philosophy in the order of physics and even chemistry . . . Three centuries spent in classing what must be measured . . . produced only a kind of pseudo-physics, as dangerous to the future of science as to that of the philosophy which imagined itself bound to it." Gilson continues, "There is then no question of denying the hylomorphism of inorganic beings, but what does seem necessary is a radical severance of the idea of organic form from the idea of inorganic form . . . between the Cartesian artificialism which makes animals into so many machines, and the Aristotelian vitalism which makes physical bodies into so many animals, there must be room for a mechanism in physics and a vitalism in biology. Every 'nature' requires a formal principle, but not every form is living. Inorganic form is a principle of structure and of arrangement of energies, but not a source of energy which is calculable, or experimentally demonstrable, nor an inner spontaneity giving rise to observable quantitative variations"; "Concerning Christian Philosophy: The Distinctiveness of the Philosophical Order," in *Philosophy and History: The Ernst Cassirer Festschrift*, ed. R. Klibansky and H. J. Paton (New York, 1963), pp. 61–76, at 72–74; this is D. A. Paton's translation of *Le réalisme méthodique* (Paris, 1936), c. 3.

to another, Aristotle's view that a substance's nature is the mover or efficient cause of its own motions is symptomatic of the major impediment to the development of the principle of inertia and of modern science; it is symptomatic, that is, of Aristotle's principle that 'everything moved is moved by another' (henceforth *OQM*, for *omne quod movetur ab alio movetur*).⁵ For if a falling boulder has no external cause that is pushing it down, then the principle *OQM* seems to require that the boulder's own substantial form or nature be its mover.⁶ Weisheipl has argued, on the contrary, that this interpretation of nature, widespread in medieval scholasticism, stems principally from Avicenna and Averroes. Aristotle, as well as Aquinas following him, never meant by the principle *OQM* that every motion requires the new causal operation of a distinct yet corporeally adjoined motive force. Once this "specter of a conjoined mover" is exposed, concluded Weisheipl, there is no inconsistency between an Aristotelian natural philosophy and the mathematical principle of inertia that founds classical physics.⁷

Weisheipl's clarification of these matters constitutes a definitive advance for our grasp of the ancient and medieval philosophy of nature. At the same time, as I maintain in part I below, Weisheipl's further conclusions regarding the causeless character of natural motion lead to insoluble difficulties for the interpreter of Aristotle and Aquinas. Here I draw attention to these further conclusions, to the difficulties that they raise, and to their ultimate source in Weisheipl's distinctive explication of Aquinas's concept

5. See, for example, Anneliese Maier: "Unfortunately, [Aristotle's] legacy, part of which was received tacitly and part explicitly, included several principles whose acceptance set a priori limits to all the efforts of late scholasticism that no individual was able to surmount Two . . . fundamental assumptions were especially momentous and disastrous The second principle is the dictum *omne quod movetur ab aliquo movetur*: every motion requires a particular mover that is connected with it and is its direct cause." According to Maier, "This axiom also paralyzed a new concept of motion that contained an important new perspective and might have made possible the discovery of the law of inertia if the Aristotelian impediment had not been in the way. More precisely, the law of inertia would have followed as a logical consequence from this new idea of motion if the conclusions derived from it had not been twisted to conform to the Aristotelian rule"; *On the Threshold of Exact Science: Selected Writings of Anneliese Maier on Late Medieval Natural Philosophy*, ed. S. Sargent (Philadelphia, 1982), pp. 148, 157–58; translated from "‘Ergebnisse’ der spätscholastischen Naturphilosophie," *Scholastik* 35 (1960): 161–88.

Cf. James Weisheipl, "The Principle *Omne quod movetur ab alio movetur* in Medieval Physics," in *Nature and Motion in the Middle Ages*, ed. W. E. Carroll (Washington, D.C., 1985), pp. 75–97, at 79–85; reprinted from *Isis* 56 (1965): 26–45.

6. See Anneliese Maier, *An der Grenze von Scholastik und Naturwissenschaft: die Struktur der materiellen Substanz, das Problem der Gravitation, die Mathematik der Formlatituden*, 2nd ed. (Rome, 1952), pp. 149–51.

7. See "The Relationship of Medieval Natural Philosophy to Modern Science: The Contribution of Thomas Aquinas to Its Understanding," in *Nature and Motion*, pp. 261–76, at 262–73; reprinted from *Manuscripta* 20 (1976): 181–96.

of nature. In part II, I reexamine Aquinas on nature to show how his conception leads to an alternate explanation of nature's causal dependence. The focus of my discussion, then, is on Aquinas, from whose text the difficulties in question stem. My aim, however, is to bring out a conception of nature that is in line with Weisheipl's two main theses but that at the same time avoids a naturalism foreign even to Aristotle himself.

I. WEISHEIPL'S CONCEPTION OF NATURE

A.

Three principal conclusions lead to the difficulties to which I refer. First, Weisheipl concludes not only that natural motion, such as of the falling boulder, needs no 'conjoined mover', as we have seen, but also that it, *properly speaking*, needs no moving cause whatever. Consider the following statements. Once a new natural "substance is generated," says Weisheipl, "its formal principle no longer needs to be moved . . . it already has everything it needs to do whatever comes naturally."⁸ Natural motion is not explained, he says, "by the constant exerted efficiency of a mover, as is often thought . . . once a particular body is in existence, there is *no need* for an agent constantly acting upon it to account for its activity. The body itself acts."⁹ And, again, "Once 'nature' as a formal, active principle exists in a body there is no further mover (*motor*) needed to explain the *actus secundus* of that nature. It immediately (*statim*) and spontaneously moves to second act by its own formal power (*virtus*), already implanted in the *actus primus*. No further efficient cause is needed to explain the continued movement of the nature once it has left the womb of the generator (*generans*)."¹⁰

According to Weisheipl, then, the boulder falls down without being moved by anything: it falls naturally or by nature and not because of the constant causal influence of some agent. Weisheipl's second principal conclusion is nothing but a consequence of the first: natural motion of this kind, since it, properly speaking, has no moving cause, is exempt from Aristotle's principle *OQM*. As Weisheipl puts it, the principle "is not ap-

8. "Principle *Omne quod movetur*," p. 92.

9. "The Concept of Nature," pp. 19–20, in *Nature and Motion*, pp. 1–24; reprinted from *The New Scholasticism* 28 (1954): 377–408, and from *Nature and Gravitation* (River Forest, Ill., 1955), pp. 1–32.

10. "The Specter of *motor coniunctus* in Medieval Physics," p. 108, in *Nature and Motion*, pp. 99–120; reprinted from *Studi sul XIV secolo in memoria di Anneliese Maier*, ed. A. Maierù and A. P. Bagliani (Rome, 1981), pp. 81–104. "The substantial form or 'nature' has the ability of itself (*in virtute*) to move immediately (*statim*) to the goal intended by nature without the intervention of any other efficient cause, except a *removens prohibens*, should that be necessary;" "Specter," p. 107.

plicable to the movement from first act to second act. That is to say, it has nothing to do with the continuation of natural motion once the formal 'nature' exists."¹¹ Thus, the principle *OQM* requires that the boulder have neither a 'conjoined mover' in Weisheipl's sense nor a mover of any kind. For Weisheipl, the principle is simply inapplicable to the boulder's fall.

Why, we must ask, is natural motion exempt from the otherwise universal principle? Weisheipl's answer constitutes the third principal conclusion: 'being moved' or *moveri* is very different from 'being in motion' or *in motu*.¹² Unlike 'being in motion', the term 'being moved' is in the passive voice and implies a cause, that is, something 'moving' in the active voice.¹³ But, maintains Weisheipl, by no means are all things that are 'in motion' being passively moved by some cause. The falling boulder is 'in motion' but is not here and now 'being moved' by any cause.¹⁴ It follows that such natural motion is not, properly speaking, an instance of 'being moved' but only of 'being in motion'.¹⁵ The passive voice continues to be found used of such motions only because of the limitations of the classical languages.¹⁶ In English, Weisheipl prefers instead the active voice,

11. "Specter," p. 107. "A body in natural motion does not need other forces to move it . . . the Aristotelian principle [*omne quod movetur* does not demand] . . . that there be movers to account for [the] motion" ("Principle *Omne quod movetur*," p. 97). See also below, n. 35.

12. "Principle *Omne quod movetur*," pp. 78, 88, 95; cf. "Quidquid movetur ab alio movetur: A Reply [to Nikolaus Lobkowicz]," *The New Scholasticism* 42 (1968): 422–31, at 422–23; "Specter," pp. 99–100, 107.

13. "Principle *Omne quod movetur*," pp. 76–78; cf. "Specter," pp. 99–100.

14. According to Weisheipl, in "Quidquid movetur," p. 423, it is not obvious that natural motions such as of free-falling objects are instances of being 'produced' by something. Accordingly, Aristotle in *Physics* 8.4 had first to prove that such objects are in some sense 'being moved' before he could affirm the principle *OQM*. Hence, he argues that although they are not 'being moved' here and now, they were 'being moved' in the past by their generator. As Weisheipl explains elsewhere, in such cases it is true that everything that *was* moved *was* moved by another, and the principle *OQM* applies in this sense ("Principle *Omne quod movetur*," p. 92). 'Movetur', then, does not refer to the nature of falling bodies except insofar as it covers the original generation of this nature (p. 95).

15. In "Principle *Omne quod movetur*," pp. 96–97, Weisheipl distinguishes a body that is 'moved', 'put into motion', 'kept in motion', or 'acted upon' from a body that is 'in natural motion'; the former needs another force to move it, whereas the latter does not.

16. Weisheipl proposes that Latin and Greek use the passive because the active voice is transitive, suggesting a subject efficiently causing its own or another's motion; by contrast, the passive voice is appropriate for a subject that lacks life, self-dominion, and freedom, and that is ultimately caused by an original generator or creator of which it is merely the instrument. "Specter," pp. 109, 112–13; "Principle *Omne quod movetur*," p. 92, n. 63; "Concept," p. 21; "Aristotle's Concept of Nature: Avicenna and Aquinas," in *Approaches to Nature in the Middle Ages: Papers of the Tenth Annual Conference of the Center for Medieval and Early Renaissance Studies* (Binghamton, N.Y., 1982), pp. 137–60, at 146, n. 29.

speaking of the boulder's form as 'acting'¹⁷ or as 'moving'¹⁸ of itself towards its goal.

This unique character of spontaneous natural motion explains why it is not covered by Aristotle's principle *OQM*. As Weisheipl explains, the principle means only that anything said 'to be moved' in the passive voice requires something said 'to move it' in the active, transitive voice.¹⁹ To interpret Aristotle's principle in this sense is to see it as self-evident.²⁰ However, argues Weisheipl, to interpret *omne quod movetur* as extending beyond the passive voice to absolutely everything said to be 'in motion' or *in motu* is both "grammatically impossible and philosophically absurd."²¹ For him this interpretation overlooks the grammatical passive in *movetur* and leads to a conjoined mover that pushes the boulder down, that is, to the very specter that haunted medieval Aristotelianism.

These three conclusions drawn by Weisheipl constitute what I refer to as the 'mover-less' or 'causeless' character of natural motion in his account. It would be false to say that for him such motion has no efficient or agent cause. God is the cause of the existence of all things, the first agent by which all things act; and as the prior cause of each thing's nature, God can even be called the 'mover' presupposed by every natural motion.²² Nevertheless,

17. "Aristotle's Concept," p. 146: "Experience alone can indicate whether bodies act spontaneously or are being acted upon by an external force;" cf. p. 148 (quoted in n. 115). See also "Concept," p. 20 (quoted above at n. 9) and p. 16: "there remains the fundamental spontaneity by which the body acts in its own right, acts as itself."

18. "Concept," p. 12: "inasmuch as they [natural bodies] spontaneously *move*, they have an 'active' principle; and inasmuch as they must *be moved*, they have the 'passive principle'." "Aristotle's Concept," p. 147: "But a non-living thing simply moves *of* itself and not *by* itself. A stone simply falls to the ground . . . it does not move itself to the ground." "Principle *Omne quod movetur*," p. 92: "In plain English we can say that for St. Thomas the form [of a natural body] simply *moves*; it is not a *mover*." "A body in natural motion does not need other forces to move it, since it already has everything it needs to move *in virtute primae agentis*; it already has, for Aristotle and many schoolmen, everything it needs even to accelerate naturally" (p. 97). See "Aristotle's Concept," p. 149; "Specter," p. 109; *The Development of Physical Theory in the Middle Ages* (New York, 1959; Ann Arbor, Mich., 1971), p. 47; "Motion in a Void: Aquinas and Averroes," in *Nature and Motion*, pp. 121–42, at 134; reprinted from *St. Thomas Aquinas, 1274–1974: Commemorative Studies*, ed. A. Maurer et al. (Toronto, 1974), vol. 1, pp. 467–88; "The Concept of Nature: Avicenna and Aquinas," in *Thomistic Papers*, vol. 1, ed. V. Brezik (Houston, 1984), pp. 65–82, at 72, 76. See also the passages cited above, n. 10.

19. "Principle *Omne quod movetur*," pp. 76–78. A similar defense of Aristotle's principle *OQM* is found in McWilliams, *Physics and Philosophy*, p. 15.

20. In his late articles, Weisheipl rejects the position that the principle *OQM* is self-evidently known to the wise and needs no proper demonstration. See especially "Aristotle's Concept," p. 159, n. 33; also "Specter," pp. 100–1; "Relationship," p. 269.

21. "Principle *Omne quod movetur*," p. 78; "Quidquid movetur," pp. 422–23; "Specter," pp. 99–100, 107. Cf. "Concept," pp. 14–15, n. 61.

22. "Concept," pp. 14–15, n. 61: "Philosophically there is no need for a constant physical mover to account for motion. . . . We are not here discussing nature 'inquantum agit in virtute Dei'. . . . That is a different question altogether. Thomas

given the existence of nature, no further operation of a mover is required, according to Weisheipl. Natural motion *as such* is mover-less. Otherwise, the principle *OQM* could apply to it.

B.

Weisheipl's conclusions regarding the causal independence of natural motion raise three difficulties, as I see it, for the interpretation of Aristotle and Aquinas. First, both thinkers use 'to be moved' and 'to be in motion' interchangeably,²³ and they nowhere appeal to a distinction between these terms in establishing the principle *OQM*. In one place Aquinas even follows Aristotle in stating, "It is necessary that everything that is *in motion* is moved."²⁴

acknowledges that 'non est contra rationem naturae [id est, ut principium activum] quod motus naturalis sit a Deo sicut a primo movente.' *Sum. theol.* I-II, 6, 1 ad 3." "Aristotle's Concept," p. 149: "And all of these [natural motions] must be brought into existence *in the first place* by another, the true efficient cause, which ultimately is God, the First Mover." In addition to n. 14 above, cf. "Principle *Omne quod movetur*," pp. 91, n. 61; 97.

23. Aquinas, in fact, rarely describes bodies as *in motu*. From the approximately one thousand passages listed in the *Index thomisticus*, ed. R. Busa (Stuttgart/Bad Cannstatt, 1974–1980), as containing the prepositional phrase *in motu*, I have found only twenty-four in which Thomas himself uses the phrase as an adjectival modifier as opposed to an adverbial modifier (not including nine instances in objections or deletions). In five passages (four others in objections), Thomas uses *in motu* interchangeably with a passive form of *moveri* or *mutari*. In addition to the quotation in the following note, see *In octo libros Physicorum Aristotelis expositio*, ed. P. M. Maggiolo (Turin/Rome, 1950), 6.6, l. 8, nn. 1–3 (826–28); *In duodecim libros Metaphysicorum Aristotelis expositio*, ed. M.-R. Cathala and R. Spiazzi (Turin/Rome, 1950), 4.5, l. 12, n. 683; 11.6, l. 6, nn. 2238, 2240; *In Aristotelis libros De caelo et mundo, De generatione et corruptione, Meteorologicorum expositio*, ed. R. Spiazzi (Turin/Rome, 1952), 2.8, l. 12, n. 4 (405). In twelve other passages, Thomas uses *ea quae sunt in motu*, or the equivalent, to refer to *all* things moved in nature; *Super Boetium De trinitate* 5.2 caput, ob 1, 5, 6, 7, sc 2, c, ll. 73–77, in *Sancti Thomae de Aquino Opera omnia: iussu impensaque Leonis XIII P.M. edita* (Rome, 1882–), vol. 50; *In Met.* 1.9, l. 15, n. 226; 3.4 (999b4–5), l. 9, n. 449; 4.5, l. 13, nn. 689–90; 7.15, l. 15, n. 1606; 8.1, l. 1, n. 1686; 9.1, l. 1, nn. 1770–71; 11.1 (1059a36–38), l. 1, nn. 2156, 2163; 12.1, l. 2, n. 2427.

Out of twenty-one passages containing ἐν κινήσει in Aristotle's authentic works, thirteen use the phrase as an adjectival modifier. In three of these the phrase is used interchangeably with a passive form of κινεῖσθαι; *Aristotelis Physica*, ed. W. D. Ross (Oxford, 1950), 4.12 (221b7–12); *Aristotelis Metaphysica*, ed. W. Jaeger (Oxford, 1957), Δ.14 (1020b17–22); *De anima*, ed. W. D. Ross (Oxford, 1956), 1.2 (405a27–29). Two others use the phrase of all things moved, in language repeated by Aquinas; *Met.* B.4 (999b4–5); K.1 (1059a36–38).

24. "Quia enim tempus est mensura motus, posset aliquis credere quod quiescens, quia non est in motu, non sit in tempore. Et ideo ad hoc excludendum dicit [Aristoteles], quod non est necesse moveri omne quod est in tempore, sicut *necesse est moveri omne quod est in motu*: quia tempus non est motus, sed numerus motus. Contingit autem esse in numero motus non solum quod movetur, sed etiam quod quiescit;" *In Phys.* 4.12 (221b7–12), l. 20, n. 8 (607). All translations and emphases therein are my own.

Second, both thinkers deem it necessary to find a *proof* of the principle *OQM* as applying to all bodies, including the heavy and light.²⁵ In fact, Aquinas discovers in the wording of *Physics* 8.4 a new demonstration of the principle *OQM*, which, he expressly says, applies also to the difficult case of natural gravity and levity.²⁶ Third, and most important, if Weisheipl is correct, then Aristotle's proof of a prime mover is inconclusive—as is Aquinas's own 'first way', at least insofar as it follows Aristotle. Aristotle's proof leads from things "being moved" to a first mover not 'being moved',²⁷ but in Weisheipl's account, this first mover may still be 'in motion' simply by its own nature. Therefore, this first mover could be a heavenly body, for example, perpetually 'in motion' of itself.²⁸ As a result, the Aristotelian proof would fail to arrive at a motionless mover, let alone at a first being.

C.

My concern in this article is not to prove that these difficulties invalidate Weisheipl's three conclusions. Instead, I wish to disclose the conception of nature that caused these difficulties, then to propose a way to amend it.

What governs Weisheipl's exposition of natural philosophy is his insight that Aristotle means by 'nature' an intrinsic source of dynamism and spontaneity in the cosmos.²⁹ Nature, of course, has other roles, as when wood *by nature* is burned by fire, and when lions *by nature* move themselves toward their prey. Nevertheless, insists Weisheipl, nature is not always either simply static, awaiting its actualization by an extrinsic agent, or radically self-moving, efficiently causing its own actualization, as in the case of animals. Nature, in other words, is not always either simply passive or 'active' in the sense of an efficient cause. Instead, just as there is no other source

25. For Weisheipl, whether a given motion requires a mover or not is known ultimately only through experience; cf. "Concept," pp. 12–13; "Aristotle's Concept," p. 146, quoted in n. 17.

26. *In Phys.* 8.4, l. 8, nn. 1–2 (1029–1030). I have discussed this demonstration in pp. 247–49 of "Why Motion Requires a Cause: The Foundation for a Prime Mover in Aristotle and Aquinas," in *Philosophy and the God of Abraham: Essays in Memory of James A. Weisheipl, O.P.*, ed. J. Long (Toronto, 1991), pp. 235–54.

27. Weisheipl himself admits that for the argument from motion to arrive at God as unmoved, *non movetur* must include 'not brought into being' and 'not intellectually moved' ("Principle *Omne quod movetur*," p. 95). In other words, the argument cannot be restricted only to certain motions.

28. Cf. Bechler's refutation in *Aristotle's Theory*, p. 47: "Hence the cosmic chain of mover-moved breaks down at each case of continuous natural motion, that is, . . . already at the first sphere of fixed stars, and then at each of the next spheres of the planets, and then at each case of a free fall or free-ascent of any element." Similarly, Francisco Suárez criticized the physical proof of God's existence, objecting to the principle *OQM*, as had John Duns Scotus: the principle does not lead beyond a celestial body moved by its own form. *Disputationes metaphysicae* 29.1, n. 7, in *Opera omnia* (Paris, 1856–1877), vol. 26, p. 23.

29. See "Concept," pp. 9–10, 23.

of a rose's being red than its nature, so there is no other source of a heart's beating or of fire's rising than its own nature. Such a source of spontaneous change, Weisheipl maintains, is the proper and strict sense of the term defined by Aristotle as an 'intrinsic principle or cause of motion or rest'.³⁰

In this definition's distinction between a principle and a cause, in fact, Weisheipl discovers the basis for differentiating the dynamic sense of nature from other secondary senses of the term.³¹ Just as a point is the principle but not the cause of a line, so the boulder's nature is the principle but not the cause of its fall. According to Weisheipl, motion 'springs' or 'flows' inevitably from this principle, without the boulder's nature efficiently causing or moving itself down. In some secondary senses, Weisheipl admits, 'nature' does refer to an efficient cause, whether extrinsic, as when water's nature cools air, or intrinsic, as when one part of the lion moves another part forward. But in efficient causality, an effect is really dependent on a really distinct causal entity. Thus, were the boulder's nature an efficient cause, a boulder would be indistinguishable from a self-moving animal. Precisely by overlooking this crucial distinction between a cause and a principle, argues Weisheipl, the Arabs and their Latin successors distorted Aristotle's philosophy of nature with the doctrine of the substantial form as a mover of inanimate bodies.³²

Another distinction, drawn by Aquinas, helps Weisheipl to elucidate his conception of 'nature' as a dynamic principle.³³ Aquinas holds that nature as an intrinsic principle of motion has two senses: first, passive or material; second, active or formal. Nature that is passive or material, on the one hand, refers to a body's characteristic "receptivity for [certain] external influences," as Weisheipl aptly puts it.³⁴ Such a principle always requires a distinct agent, as when wood, naturally combustible, is burned, or when the celestial bodies in the Aristotelian cosmos are moved. For Weisheipl, the principle *OQM* applies to all and only those natural motions that arise from nature in this passive sense.³⁵ Nature that is active and formal, on the other hand, refers to an 'internal spontaneity' for motion as opposed to a receptivity. Such a principle, properly speaking, needs no mover in Weisheipl's reading. The heart's beating and fire's rising have no per se efficient cause except whatever originally generated these bodies, giving them their sub-

30. "Concept," p. 16.

31. "Specter," pp. 103–4; cf. "Aristotle's Concept," pp. 146–48; "Concept," pp. 18, 20–21.

32. "Specter," pp. 100, 105, 118–20; "Principle *Omne quod movetur*," p. 96.

33. See "Concept," pp. 9–21.

34. "Concept," p. 10.

35. "Concept," p. 14, n. 61: "The point is that this axiom [*OQM*] applies only to nature as a *passive* principle." Cf. "Principle *Omne quod movetur*," p. 95: "It should be clear that for St. Thomas *movetur* refers exclusively to nature as a passive and material principle of motion and rest. It does not refer to nature as an active and formal principle of motion and rest, except in the sense that it too had 'to be moved,' generated, produced in the first place."

stantial form or nature; because unless something impedes, such spontaneous motions follow immediately and necessarily from a thing's form as an active and formal principle. Consequently, Weisheipl can conclude, as we have seen, that motions proceeding from nature *as active* are not covered by the principle *OQM* and are better described with the active rather than with the passive voice. In such cases, nature is not 'being moved' by anything. Instead, independently of any moving cause, it spontaneously comes to be and then continues to be 'in motion'—'acting' or 'moving of itself'.

II. AQUINAS'S CONCEPTION OF NATURE

Precisely this conception of a 'causeless' natural motion has led to the three difficulties already raised above. To one who follows Weisheipl's account, such a conception seems to be derived directly from the text of Aquinas. Nevertheless, I argue that Aquinas's meaning has been missed because the central texts have been read separately from the philosophical principles that animate them. As a corrective, I present in what follows six principal elements of Aquinas's doctrine on nature: (A) nature as a thing's principle of motion is distinct from a thing's substantial 'nature', form and matter; (B) nature as a principle of motion is a passive potency; (C) such nature is divided into 'active' and 'formal' versus 'passive' and 'material'; (D) nature as active is an accidental quality that is, nevertheless, in passive potency to further act; (E) all passive potencies require agents for their actualization; (F) all natural motions are continuously caused by a mover found even within the natural world.

These elements together establish that there is no 'causeless' natural motion for Aquinas. Specifically, they establish, contrary to Weisheipl, that nature as an active principle of motion nevertheless requires a distinct mover; that, for Aquinas, the falling boulder is *being moved*; and that it requires the constant exertion of an efficient cause that moves it down.

A.

The first element regards the meaning of 'nature': it is necessary to distinguish clearly between nature as a principle of motion and nature as a thing's substantial matter or form. The more this distinction is lost sight of, the more nature's dependence on a cause will be overlooked. The distinction is evident in Aristotle's list, in *Metaphysics* Δ.4, of six different senses of φύσις: (1) the becoming of what grows; (2) the first element out of which it grows; (3) 'that from which is the first motion' in any natural thing; (4) the matter out of which a natural thing comes to be and exists; (5) the form

of a natural thing; (6) any οὐσία. According to Aristotle here, the primary sense of 'nature' is the fifth sense and not the third.³⁶

Aquinas frequently recounts essentially the same list and understands the order to be intentional, a chronology of the extended senses of one term 'nature'.³⁷ The account of the *Sentences* commentary is typical:

But nature receives its name from being born (*nascendo*), which is, properly speaking, the generation of living things that produce like from like in species. Hence, 'nature' when first introduced signified the very generation of living things, namely, their 'nativity'. Additionally, the name 'nature' was transferred to signify the active principle of this generation, because powers that act are customarily named from their actions. From there the name 'nature' further came to signify the active principle of any natural motion; and further [came] to signify also the material principle of any generation; and, from there also [came] to signify the formal principle, which is the terminus of generation. But because generation terminates not only at form but also at a composite substance, for this reason [the name 'nature'] was transferred to signify any substance, according to what the Philosopher says in *Metaphysics* 5, and to signify also any being, as Boethius says.³⁸

As a result of this interpretation, Aquinas regards the primary sense of the term, namely, 'nature' as corporeal form, to be not only distinct from but also derived from 'nature' as a principle of motion. For 'nature' referred first to 'nativity' or the generation of living things (1), then to the source of that generation (2). Next, since such a source is intrinsic, explains the *Summa theologiae*, 'nature' came to mean the inner source of any motion.³⁹ Then, since 'nature' as a principle of motion (3) is either

36. *Met.* Δ.4 (1015a13–19).

37. In addition to the passages cited in the following four notes, see *In Met.* 5.4, l. 5, nn. 824–26, 808–22.

38. *Scriptum super libros Sententiarum*, ed. P. Mandonnet and M. Moos (Paris, 1929–1947), 3.5.1.2: "natura autem a nascendo nomen accepit, quae proprie dicitur generatio viventium ex similibus similia in specie producentium. Unde secundum primam sui institutionem natura significavit generationem ipsam viventium, scilicet nativitatem. Item translatum est nomen naturae ad significandum principium activum illius generationis, quia virtutes agentes ex actibus nominari consueverunt. Inde ulterius processit nomen naturae ad significandum principium activum cujuslibet motus naturalis. Et ulterius ad significandum etiam principium materiale cujuslibet generationis. Et inde etiam ad significandum principium formale, quod est terminus generationis. Sed quia generatio non solum terminatur ad formam, sed ad substantiam compositam; ideo translatum est ad significandum quamlibet substantiam, secundum quod dicit philosophus in 5 *Metaphysicorum*, et ad significandum etiam quodlibet ens, sicut dicit Boetius."

39. *Summa theologiae* (Ottawa, 1953), 1.29.1 ad 4; *De unione verbi incarnati* 1c, in *S. Thomae Aquinatis Quaestiones disputatae*, vol. 2, ed. P. Bazzi et al. (Turin/Rome, 1953). See *In Met.* 5.4, l. 5, n. 815: "quod nascitur semper est coniunctum ei ex quo nascitur. Ideo natura numquam dicit principium extrinsecum, sed secundum omnes suas acceptiones dicit principium intrinsecum."

material or formal, 'nature' came to refer to a thing's substantial principles, to matter (4) or to form (5).⁴⁰ For this reason, explains Aquinas elsewhere, immediately after Aristotle defines 'nature' as a principle of motion in *Physics* 2.1, he proceeds to divide 'nature' into matter and form.⁴¹ In other words, for Thomas, the discussion of the third sense of 'nature' in the *Physics* occasions the discussion of the distinct fourth and fifth senses.

B.

If nature as a principle and cause of motion is not substantial matter or form, what is it? Principles and causes are obviously distinct from that of which they are the principles and causes. Hence, nature in the relevant sense is distinct from motion. And since motion is a sort of act of a subject, nature is that in a subject because of which the subject has a characteristic act. Nature, that is, is a kind of potency for act. The second element of Aquinas's doctrine on nature, therefore, regards nature as a kind of potency.

In a revealing passage in *Metaphysics* 0.8, Aristotle, and Aquinas following him, expressly places nature in the same genus as active potency—while also denying that nature is an active potency.⁴² But what genus is common to nature and active potency? The answer lies in *Metaphysics* Δ.12's discussion of the meaning of 'potency'. Δύναμις, in each of its two main senses, is classified, like nature, as a 'principle of motion'. Aristotle defines an 'active

40. "Et quia huiusmodi generatio est a principio intrinseco, extensum est hoc nomen ad significandum 'principium intrinsecum cuiuscumque motus.' Et sic definitur natura in 2 *Physicorum*. Et quia huiusmodi principium est formale vel materiale, communiter tam materia quam forma dicitur natura" (ST 1.29.1 ad 4). See also *Liber de veritate catholicae fidei contra errores infidelium, seu Summa contra gentiles*, ed. C. Pera et al. (Turin/Rome, 1961), 4.35 (Amplius. Nomen *naturae*): "Et quia huiusmodi principium [id est, principium motus intrinsecum mobili] est materia vel forma, ulterius natura dicitur forma vel materia rei naturalis habentis in se principium motus." Cf. *In Met.* 5.4, l. 5, nn. 816, 819.

41. SN 3.3.2.1 ad 6: "cujuslibet motus naturalis principium est in eo quod movetur, non tamen eodem modo, ut in 2 *Physicorum* dicit Commentator. In quibusdam enim est principium activum, ut in motu gravium et levium; in quibusdam vero principium passivum, ut in generatione simplicium corporum. Unde et Philosophus naturam, quam principium motus in eo quod movetur definit, statim subdividit in materiam et formam." Cf. SN 2.18.1.2 and *In Met.* 7.9, l. 8, n. 1442ζ (quoted in nn. 51 and 53).

42. *In Met.* 9.8 (1049b6–10), l. 7, nn. 1844–55: "quia et natura ad idem pertinere videtur quod potentia [id est, activa]. Est enim natura in eodem genere cum potentia ipsa, quia utrumque est principium motus, licet natura non sit principium motus in alio, sed in eo in quo est, inquantum huiusmodi." Cf. the opposition between δύναμις (active potency) and φύσις in Aristotle, *De caelo*, ed. D. J. Allan (Oxford, 1936), 3.2 (301b18–20).

potency' as a 'principle of motion *in* another', whereas a 'passive potency' is a 'principle of motion *by* another'.⁴³ Nature and potency, then, as principles of motion, are in the same genus.

At the same time, Aristotle's denial that nature is an active potency leaves nature to be aligned only with passive potency. The reason for this denial is clear given Aristotle's explanation of active and passive potency. Recall the definition of 'nature' in the *Physics*: 'a principle and cause of being moved and of resting *in that to which it belongs* primarily and per se'.⁴⁴ An active potency, however, Aristotle explains, is a principle of motion that is *in something other* than the thing that is moved, or that is in the thing *qua* other (that is, in one part and not in the whole 'primarily'). This principle is what causes another thing's motion, as the sculptor's art effects the statue. In fact, active δύνάμις, the primary sense of the term for Aristotle, would be best rendered in English as active 'power' so as to refer to the extrinsic principle that is actualizing rather than to the intrinsic 'potency' that is being actualized. By contrast, passive potency is the principle *in* the thing moved, the principle actualized or effected *by* another, like the marble's potency to be sculptured. It is easy to see, then, why 'nature', a principle of motion intrinsic to a thing, is classed with passive potency rather than with active power. Indeed, nature, as belonging to a thing primarily and per se, is a particular kind of intrinsic principle of motion, or passive potency.

That Aquinas agrees with this account of the relation between nature and passive potency is clear from his exposition of *Metaphysics* Δ.12 on active power—an important text:

[Aristotle] therefore sets forth four modes of 'potency' or 'power'. The first of these is that potency is said to be a principle of motion or change in another insofar as it is other. For, there is a certain principle of motion or change *in that which is changed*: namely, matter itself; or some formal principle from which motion results, just as upward or downward motion follows upon the form of that which is heavy or light. But such a principle cannot be called an active potency [that produces] this motion. For, everything moved is moved by another. And, something does not move itself except through parts insofar as one part moves another, as is proved in *Physics* 8. Therefore, nature according as it is the principle of motion in that in which it exists is not grasped as an active potency but rather as passive. For, heaviness in earth is not a principle for moving but rather for being moved. Therefore, the active potency of motion must be in something other than that which is moved, just as the power of building is not in the thing built but rather in the builder.⁴⁵

43. *Met.* Δ.12 (1019a15–20). For the terms 'active' and 'passive' potency, see *Met.* Δ.15 (1021a14–18).

44. Aristotle, *Phys.* 2.1 (192b21–22).

45. *In Met.* 5.12, l. 14, n. 955 (corrections to the Latin text are from Weisheipl, "Concept," p. 19, n. 78): "Ponit ergo [Aristoteles] . . . quattuor modos potentiae

The principle of motion that is *in* what is moved, whether it be matter or a formal principle, cannot be called an 'active power', explains Thomas,⁴⁶ because an active power must be other than what it moves, even in the case of self-motion. Therefore, he infers, as a principle of motion *in* a thing, nature is grasped not under the notion of active power but rather under that of passive potency: *non comprehenditur sub potentia activa, sed magis sub passiva*. The heaviness, for example, which is soil's 'nature', is not a principle that actively moves soil down (*principium ut moveat*) but is the principle whereby soil is passively moved always in the same direction (*principium ut moveatur*). For Aquinas it is clear, then, that nature is a kind of passive potency of the boulder for falling.

From the first two elements of Aquinas's doctrine it follows that nature is a passive potency for motion and, as such, is distinct from substantial matter or form. The reason is that nature, insofar as it is a principle of a motion distinct from or accidental to a thing's substance, must itself be nonsubstantial since potency and act lie in the same genus.⁴⁷ Furthermore, nature in this sense is common to many bodies that nevertheless differ in their substantial form.⁴⁸ Given these two elements, then, the third element can now be understood, namely, Aquinas's distinction between nature as an active or formal principle of motion and nature as a passive or material principle.

vel potestatis. Quorum primus est, quod potentia dicitur principium motus et mutationis in alio in quantum est aliud. Est enim quoddam principium motus vel mutationis in eo quod mutatur, ipsa scilicet materia: vel aliquod principium formale, ad quod consequitur motus, sicut ad formam gravis vel levis sequitur motus sursum aut deorsum. Sed huiusmodi principium non potest dici potentia activa, ad quam pertinet motus ille. Omne enim quod movetur ab alio movetur. Neque aliquid movet seipsum nisi per partes, in quantum una pars eius movet aliam, ut probatur in octavo *Physicorum*. Natura igitur, secundum quod est principium motus in eo in quo est, non comprehenditur sub potentia activa, sed magis sub passiva. Gravitatis enim in terra non est principium ut moveat, sed magis ut moveatur. Potentia igitur activa motus oportet quod sit in alio ab eo quod movetur, sicut aedificativa potestas non est in aedificato, sed magis in aedificante."

46. Note that nature as a principle of motion, precisely as an *intrinsic* principle, is never, for Aquinas, the efficient cause of self-motion (namely, soul) or of the natural motion in other bodies. For Weisheipl, by contrast, 'nature' sometimes refers to such efficient causes. See, for example, "The Concept of Nature: Avicenna and Aquinas," p. 71, which contradicts, however, p. 69; see also Joseph Gredt, *Elementa philosophiae aristotelico-thomisticae*, 10th ed. (Freiburg, 1953), vol. 1, p. 225. Furthermore, since for Thomas, unlike for Weisheipl ("Specter," pp. 104–5), there is self-motion not only with respect to place but also with respect to quantity and quality, growth is caused not by nature as an active principle but by soul. See *Quaestiones disputatae de veritate* 22.3c, in *Opera omnia*, vol. 22; *In Met.* 7.8, l. 8, n. 1442e; contra "Specter," p. 108; but cf. "Concept," p. 18.

47. For this argument, see ST 1.77.1c and 1.59.2c (quoted in n. 98). By the same reasoning, nature as an intrinsic principle of substantial change would be one with a thing's matter, although the natural alterations that lead up to natural generations and corruptions require an accidental principle.

48. For this argument, see SN 1.14.1.5 ad 2 (quoted in n. 99).

C.

In more than ten passages,⁴⁹ Aquinas distinguishes two kinds of natural motion: 'that which proceeds from a formal or active principle' and 'that which proceeds from a material or passive/receptive principle'.⁵⁰ In the earliest text that presents this distinction, from the *Sentences* commentary,⁵¹ Aquinas traces it to two texts of Averroes.⁵² This origin is both revealing and ironic. On the one hand, Aquinas finds in Averroes an apt defense, alluded to in the Commentator's discussion of 'nature' as it applies to

49. The passages are listed with the note in which they may be found: SN 2.18.1.2c [n. 51]; 3.3.2.1 ad 6 [n. 41]; 3.22.3.2 sol. 1 [n. 54]; 4.43.1.3 [n. 50]; *De ver.* 12.3c [n. 64]; CG 3.23 (Amplius. Si) [n. 58]; (Non tamen) [n. 63]; (Hoc autem) [n. 66]; 4.97 (Non debet) [n. 86]; *De pot.* 5.5c [n. 75]; CT 1.171 [n. 70]; ST 1.70.3 ad 4; 1–2.6.5 ad 2 [n. 74]; *In Phys.* 2.1, l. 1, n. 4 (144) [n. 76]; *In Met.* 5.12, l. 14, n. 955 [n. 45]; 7.9, l. 8, n. 1442ζ [n. 53]; *In De caelo* 1.3, l. 6, n. 13 (70) [n. 69]; 3.2, l. 7, n. 5 (590) [n. 62].

50. This is Aquinas's most usual way of presenting the distinction. Pace Weisheipl ("Concept," p. 12; cf. "Specter," p. 105; see below, n. 114), Aquinas does not refer to this distinction through the terminology 'nature as form' versus 'nature as matter' (*natura secundum materiam*); in fact, such terminology confuses his thought, as we shall see. By contrast, Weisheipl's terms 'nature as an active principle' versus 'nature as a passive principle', although also not found in Thomas, do accurately describe Thomas's distinction. See SN 4.43.1.3 (ST 3.75.3): "Natura enim est principium motus in eo in quo est, vel activum, ut patet in motu gravium et levium, et in alterationibus naturalibus animalium; vel passivum, ut patet in generatione simplicium corporum. Passivum autem principium naturalis generationis est potentia passiva naturalis, quae semper habet aliquam potentiam activam sibi respondentem in natura, ut dicitur in 9 *Metaphysicorum*."

51. SN 2.18.1.2c: "Non enim eodem modo omnes motus naturales dicuntur, ut in 2 *Physicorum* et in 1 *Caeli et mundi* Commentator dicit; sed quidam propter principium activum intus existens, ut motus localis gravium et levium; et quidam propter principium passivum quod est secundum potentiam ab agente naturali natam in actum educi, ut in generatione et alteratione simplicium corporum: unde et natura dividitur in materiam et formam." See SN 3.3.2.1 ad 6 (quoted in n. 41).

52. Averroes explains that when the *Physics* affirms a principle of motion *within* things changed not only through locomotion and growth but also through 'alteration' (including generation and corruption), Aristotle uses the term 'principle' equivocally. Only in the case of locomotion are there simple bodies, not composed of soul, that are moved of themselves. Hence, the intrinsic principle by which simple bodies are 'altered' is matter, whereas the intrinsic principle by which composites of body and soul are 'altered' is form: "Quoniam illud principium, quod est in compositis, est secundum formam, et in simplicibus est secundum /F/ materiam. Sed hoc nomen principium usitatur hic aequivoce pro materia, et forma." *In libros Physicorum Aristotelis* 2.1 (192b13–15), t. 1, f. 48E–F, in *Averrois commentaria et introductiones in omnes libros Aristotelis cum eorum versione latina* (Venice, 1562–1574), vol. 4. On this equivocality, see also f. 48D; t. 3, f. 49I.

Averroes also distinguishes equivocal uses of 'nature' as applied to the body and 'form' of the heavens: "Non est ergo intelligendum hoc, quod dicitur quod natura in corpore caelesti est causa motus esse formam. Forma enim abstracta non significat naturam corporis: neque in corpore caelesti est forma naturalis, quae sit causa motus ipsius . . . forte intelligendum est in hoc loco de natura, quae est causa

matter, of the naturalness of such changes as birth and death,⁵³ or of the heavens' rotation—despite the heavens' being caused by spiritual movers.⁵⁴ On the other hand, according to Averroes's doctrine of 'nature' as applying to form, the mover of falling bodies is their form.⁵⁵ On this point, of course, Aquinas disagrees with Averroes, as early as the *Sentences*

motus, subiectum simplex formae abstractae corporis /F/ caelestis: et hoc ipsum corpus non habet in se formam corporalem. . . . Secundum hoc igitur possumus intelligere hoc nomen natura, quae dicitur de corpore caelesti, et de aliis corporibus simplicibus, gravibus, scilicet, et levibus: et erit hoc aequivoco. /G/ Aut dicemus quod formae abstractae, secundum quod sunt formae abstractae, innatae sunt ut quod illud, quod ab eis movetur, sit corpus, neque grave, neque leve, sicut innatae sunt ut motum ab eis sit rotundum, et sicut innata est forma ignis ut habeat materiam propriam. Dicitur igitur hoc nomen natura secundum hoc de forma, sicut dicitur de formis aliorum corporum simplicium." *In De caelo* 1.2 (268b13–17) t. 5, f. 5E–G, in *Averrois commentaria*, vol. 5.

53. Thomas, arguing against a doctrine of inchoate forms, concludes, "Non tamen sequitur quod generatio inanimatorum corporum non sit naturalis. Non enim oportet ad motum naturalem, quod semper principium motus, quod est in mobili, sit principium activum et formale; sed quandoque est passivum et materiale. Unde et natura in secundo *Physicorum* distinguitur per materiam et formam. Et ab hoc principio dicitur naturalis generatio simplicium corporum, ut dicit Commentator in secundo *Physicorum*." *In Met.* 7.9, l. 8, n. 1442ζ. Cf. also *De potentia* 5.7, in *Quaestiones disputatae*, vol. 2: "Et ab hoc [passivo] principio generatio et corruptio in elementis sunt motus vel mutationes naturales; et non propter principium activum ut dicit Commentator."

54. SN 2.14.1.3 ad 1: "sicut Commentator dicit in 1 *Caeli et mundi*, motus caeli dicitur naturalis, non quia principium eius activum sit aliqua forma naturalis, sed quia ipsum corpus caeleste est talis naturae ut talem motum natum suscipere ab aliquo intellectu. . . . Natura enim non tantum dicitur de forma, sed etiam de materia." See SN 3.22.3.2 sol. 1: "Natura autem dicitur dupliciter: scilicet de forma quae est principium activum motus et de materia quae est principium passivum. Secundum hoc igitur dupliciter dicitur aliquis motus naturalis. Uno modo quia in ipso quod movetur est principium activum motus; et sic corpora gravia et levia moventur naturaliter. Alio modo quia in eo quod movetur est dispositio naturalis per quam aliquid est mobile ab aliquo movente; et hoc contingit dupliciter. Quia vel est ista aptitudo ad hoc quod moveatur ab illo movente cum inclinatione ad contrarium motum, sicut est in corpore animalis; et tunc motus ille dicitur violentus quantum ad naturam corporis, inquantum est corpus; naturalis autem quantum ad naturam corporis, inquantum est animatum, ut dicit Philosophus in 8 *Physicorum*. Aut non est aptitudo ad contrarium inclinans, sicut patet in motu corporum caelestium, quae moventur a substantia separata, et tamen dicuntur moveri naturaliter, ut dicit Commentator in 1 *Caeli et mundi*." See also SN 4.48.2.2 ad 10 (ST 3.91.2): "motus caeli non dicitur naturalis . . . hoc modo quod habeat principium activum in natura corporis, sed receptivum tantum; principium autem activum ejus est in substantia spirituali, ut dicit Commentator in principio *Caeli*."

55. See Averroes, *In De caelo* 3.2, t. 28, ff. 198K–99A, especially K: "Lapis enim movet se, inquantum est gravis in actu, et movetur inquantum est potentia inferius. . . . Forma igitur ejus movet, inquantum est forma, et movetur, secundum quod est in materia;" 4.3, t. 22, f. 249C–E, especially D: "Gravitas enim in lapide est motor, secundum quod est forma tantum, et ipsa est mota, inquantum est in prima materia." For Averroes, the simple elements are self-moved, although only accidentally, by their form's moving the medium; their only per se mover is their generator.

commentary⁵⁶ and later even by name.⁵⁷ In the *Contra gentiles*⁵⁸ and thereafter, in fact, Aquinas uses his own doctrine of nature as a formal principle—a doctrine apparently not found even in Albert⁵⁹—precisely to establish an alternative to Averroes. Out of Averroes's own words, therefore, Aquinas has apparently developed an original distinction, namely, between formal and material nature, to counter not only an 'Augustinian' doctrine of inchoate forms⁶⁰ but also an Averroean doctrine of self-moving elements.

Aquinas's examples of natural motions help indicate the meaning of his distinction. Active-formal nature lies behind the heavy's falling, the

56. SN 2.14.1.3c: "Quidam enim dicunt quod sicut motus aliorum corporum simplicium est ex naturis eorum corporalibus, ita etiam motus corporis caelestis. Illud autem non videtur esse verum. . . . In motu autem corporum simplicium, quamvis forma naturalis sit principium motus, non tamen est motor; sed essentialis motor est generans quod dedit formam, et accidentaliter est removens prohibens."

57. See the full discussion of *In De caelo* 3.2, l. 7, nn. 8–9 (593–94).

58. CG 3.23: "Amplius. Si principium motus caeli est sola natura, absque apprehensione aliqua, oportet quod principium motus caeli sit forma caelestis corporis, sicut et in elementis: licet enim formae simplices non sint moventes, sunt tamen principia motuum, ad eas enim consequuntur motus naturales, sicut et omnes aliae naturales proprietates. Non autem potest esse quod motus caelestis sequatur formam caelestis corporis sicut principium activum. Sic enim forma est principium motus localis, inquantum alicui corpori, secundum suam formam, debetur aliquis locus, in quem movetur ex vi suae formae tendentis in locum illum, quam quia dat generans, dicitur esse motor: sicut igni secundum suam formam competit esse sursum. Corpori autem caelesti, secundum suam formam, non magis congruit unum ubi quam aliud. Non igitur motus caelestis principium est sola natura."

59. For Weisheipl, Albert's doctrine of nature is identical to Thomas's ("Specier," pp. 108–10; cf. "Aristotle's Concept," p. 145; "Concept," p. 13). Yet, Albert, in the *loci classici* of his Aristotelian paraphrases, *Physica* 2.1 or 8.4, does not propose Aquinas's distinction between nature as a formal and as a material principle; in *Opera omnia*, ed. Institutum Alberti Magni Coloniense (Münster i. West., 1951–), vol. 4. On the contrary—pace Weisheipl, "Principle *Omne quod movetur*," p. 89, n. 50; "The Interpretation of Aristotle's *Physics* and the Science of Motion," in *The Cambridge History of Later Medieval Philosophy*, ed. N. Kretzmann, A. Kenny, and J. Pinborg (Cambridge, 1982), pp. 521–36, at 528–29—Albert maintains that nature in the sense of form, insofar as it is distinct from its subject, is an efficient principle of motion and an *active power* (*Physica* 2.1.3, p. 81.72–76), that is, is a natural body's proximate mover (p. 80.10–32). In fact, in his *De caelo et mundo*, Albert adopts the essentially Averroean doctrine that although the prime mover of a heavy body is its generator, its proximate mover is the *accidental* form of heaviness, which moves the body down (in *Opera omnia*, vol. 5.1, 3.1.7, p. 218.52–95; 4.2.2, p. 259.31–39); as a result, the whole body moves itself *per accidens*, as a sailor in a ship (4.2.1, p. 257.57–67; 4.2.2, p. 260.16–22). See below, n. 140. For the view of early Albert that the substantial form moves fire upward, see *De quattuor coaequaevis* q. 16, a.1 ad 1, in *Opera omnia*, ed. Borgnet, vol. 34 (Paris, 1895), p. 439a; *In Sententiarum libros* 2.14.6c, p. 266a (Borgnet, vol. 27).

60. SN 2.18.1.2c; *In Phys.* 2.1, l. 1, nn. 3–4 (143–44); *In Met.* 7.9, l. 8, n. 1442a–ζ (see above, n. 53). Aquinas would find Albert at least unclear on this matter. See Bruno Nardi, "La dottrina d'Alberto Magno sull' *inchoatio formae*," in *Studi di*

light's rising, the heart's beating, and iron's moving toward a magnet.⁶¹ Passive-material nature lies behind the heavenly bodies' rotating, terrestrial bodies' being moved by the heavens,⁶² terrestrial bodies' being generated by terrestrial causes,⁶³ and living bodies' being moved by their souls.⁶⁴ The difference between these two classes of nature is best seen by comparing the boulder's fall to celestial rotation. Every boulder, like every other heavy body, falls in one direction: toward the earth's center. Each celestial body, however, is moved in its own peculiar direction with its own peculiar velocity. Accordingly, Aquinas maintains that each celestial sphere requires a

filosofia medievale (Rome, 1960), pp. 69–101; James Weisheipl, "The Axiom *Opus naturae est opus intelligentiae* and Its Origins," in *Albertus Magnus, Doctor universalis: 1280/1980*, ed. G. Meyer and A. Zimmermann (Mainz, 1980), pp. 441–63, at 455–56.

61. *De motu cordis*, ll. 118–32, in *Opera omnia*, vol. 43. According to *In Phys.* 7.2, l. 3, n. 7 (903), the magnet 'moves' iron by giving to it a new quality through which it is moved to the magnet. In SN 4.43.1.3 (quoted in n. 50), Aquinas also traces "natural alterations of animals" to nature as active. Among these he perhaps includes the spontaneous changes of temperature that accompany passions of the soul and that, in turn, cause all the other nonvoluntary natural changes, such as in an animal's heartbeat. Cf. *De motu cordis*, ll. 242–57, quoting Aristotle; see Aristotle's *De motu animalium*, ed. M. Nussbaum (Princeton, N.J., 1978), 11 (703b6–19).

62. *In De caelo* 3.2, l. 7, n. 5 (590): "Est enim motus secundum naturam, cuius principium est in ipso quod movetur: non solum autem principium activum, sed etiam passivum, quod quidem est potentia per quam aliquid est naturaliter susceptivum motionis alterius. Et ideo, cum corpora inferiora moventur a corporibus superioribus, non est motus violentus, sed naturalis: quia in corporibus inferioribus est naturalis aptitudo ut sequantur motiones superiorum corporum." See also CG 2.30 (Necessitas autem); ST 3.44.2 ad 1. For the natural motions of inferior orbs carried by superior and for the tides affected by the moon's orbit, see SN 2.14.1.5 ad 4, and *De pot.* 4.1 ad 20.

63. CG 3.23 (Non tamen): "Non tamen est negandum motum caelestem esse naturalem. Dicitur enim esse motus aliquis naturalis, non solum propter activum principium, sed etiam propter passivum: sicut patet in generatione simplicium corporum. Quae quidem non potest dici naturalis ratione principii activi: movetur enim id naturaliter a principio activo cuius principium activum est intra, natura enim est principium motus in eo in quo est; principium autem activum in generatione simplicis corporis est extra. Non est igitur naturalis ratione principii activi, sed solum ratione principii passivi, quod est materia, cui inest naturalis appetitus ad formam naturalem. Sic ergo motus caelestis corporis, quantum ad activum principium, non est naturalis, sed magis voluntarius et intellectualis: quantum vero ad principium passivum est naturalis, nam corpus caeleste habet naturalem aptitudinem ad talem motum." See also *In Met.* 7.7, l. 6, n. 1389, and the texts quoted above, nn. 41, 50, 51, 53.

64. SN 3.22.3.2, sol. 1 (quoted above, n. 54); cf. *In De caelo* 1.2, l. 3, n. 4 (22), quoted in n. 130; *De ver.* 12.3c, ll. 200–10: "aliquid dicitur naturale dupliciter: uno modo quia eius principium activum est natura, sicut naturale est igni ferri sursum; alio modo quando natura est principium dispositionum ipsius, non quarumlibet, sed earum quae sunt necessitas ad talem perfectionem, sicut dicitur quod infusio animae rationalis est naturalis in quantum per operationem naturae corpus efficitur dispositum dispositione quae est necessitas ad animae susceptionem."

special mover of its own imparting to it its peculiar motion.⁶⁵ A boulder, by contrast, given that it exists and that it is free of impediments, requires no additional mover imparting to it its downward motion. The motions of the boulder and of the heavens, then, although both natural, differ with respect to their determinacy, as well as with respect to their causality.

Aquinas traces the difference between these two kinds of natural motion to a difference in the intrinsic principle or 'nature' from which each motion arises. He uses the terms 'formal' and 'active', versus 'material' and 'passive', to describe the two different kinds of nature. Each term refers to both the determinacy and the causality of the motion that stems from that natural principle. Thus, in the first place, 'material' or 'passive' refers to nature as an indeterminate principle, whereas 'formal' or 'active' refers to nature as determinate. The heavens are said to possess a 'material' principle of their continuous rotation because a celestial body is indifferently related to any one particular place, says Thomas, just as prime matter is indifferently related to any one substantial form.⁶⁶ Similarly, the heavens' nature is called 'passive' insofar as it is in potency to each and every place, since a thing is passive insofar as it is in potency.⁶⁷ Such a principle is also described as 'susceptive',⁶⁸ even of contraries.⁶⁹ By contrast, the boulder is said to possess a 'formal' prin-

65. Cf. CG 2.92 (*Substantiae enim*); 2.90 (*Praeterea. Si*); *De spiritualibus creaturis* 6, in *Quaestiones disputatae*, vol. 2.

66. CG 3.23 (*Hoc autem*): "Hoc autem manifeste apparet si habitudo consideretur caelestis corporis ad suum ubi. Patitur enim et movetur unumquodque secundum quod est in potentia, agit vero et movet secundum quod est actu. Corpus autem caeleste, secundum suam substantiam consideratum, invenitur ut in potentia indifferenter se habens ad quodlibet ubi, sicut materia prima ad quamlibet formam, sicut praedictum est. Aliter autem est de corpore gravi et levi, quod, in sua natura consideratum, non est indifferens ad omnem locum, sed *ex ratione suae formae* determinatur sibi locus. Natura igitur corporis gravis et levis est principium activum motus eius: natura vero corporis caelestis est motus ipsius passivum principium. Unde non debet alicui videri quod violenter moveatur, sicut corpora gravia et levia, quae a nobis moventur per intellectum. Corporibus enim gravibus et levibus inest naturalis aptitudo ad contrarium motum ei quo moventur a nobis, et ideo a nobis moventur per violentiam: licet motus corporis animalis, quo movetur ab anima, non sit ei violentus inquantum est animatum, etsi sit ei violentus inquantum est grave quoddam. Corpora autem caelestia non habent aptitudinem ad motum contrarium, sed ad illum quo moventur a substantia intelligente. Unde simul est voluntarius, quantum ad principium activum; et naturalis, quantum ad principium passivum."

For the comparison to prime matter, see also CG 4.97 (*Non debet*).

67. CG 3.23 (*Hoc autem*).

68. "[Passivum principium] est potentia per quam aliquid est naturaliter susceptivum motionis alterius"; *In De caelo* 3.2, l. 7, n. 5 (590); cf. SN 2.14.1.3 ad 1 (quoted above, n. 54). For the term 'receptive', see *De pot.* 5.5 (below, n. 75); ST 1-2.6.5 ad 2 (below, n. 74); and SN 4.48.2.2 ad 10 (above, n. 54).

69. *In De caelo* 1.3, l. 6, n. 13 (70): "contrarietas motuum naturalium consequitur proprietatem principiorum activorum sive formalium, ad quae consequitur motus; non autem contrarietatem principiorum passivorum sive materialium, quia eadem materia susceptiva est contrariorum." For a heavenly body's lack of aptitude to one contrary, see SN 3.22.3.2 sol. 1 (quoted in n. 54).

ciple of its free fall since it is not indifferent to all locations, but *by reason of its form* it is determined to one place,⁷⁰ down, and is resistant to the contrary, up.⁷¹ The boulder's motion, then, is more 'from its form', as Thomas sees it, than from its matter.⁷² By the same token, the principle of the boulder's motion can be called an 'active' principle since it falls always down not by being merely in potency but by being partly in act.⁷³

In the second place, the terms 'material' or 'passive' versus 'formal' or 'active' refer to the causality of natural motion, namely, to whether or not nature needs an additional moving cause in order to be in motion. The celestial sphere's nature is called 'material' or 'passive' because, by being of itself simply in potency, it must receive the action of an exterior agent,⁷⁴ an intelligence that contains and supplies, as we have seen, that nature's formal determination. By contrast, the boulder's nature is called a 'formal' or 'active' principle precisely because falling down is simply a necessary consequence of it, requiring no new mover for its origin.⁷⁵ For, explains Thomas, just as other proper accidents follow necessarily upon substantial form without another cause, so also does actually being down follow upon the form heaviness, and hence actually being moved down if the boulder is

70. CG 3.23 (Hoc autem), quoted in n. 66. Through its form (*secundum suam formam*), the boulder is owed a certain place when it is not there and is suited to a certain place when it is; CG 3.23 (Amplius. Si), quoted in n. 58. For the contrast with the heavens, see *Compendium theologiae*, in *Opera omnia*, vol. 42, 1.171: "Ridiculum autem est dicere quod, sicut corpus leue per suam naturam mouetur sursum, ita corpus caeleste per suam naturam circulariter moueatur sicut per actuum principium. . . . Cum . . . motus circularis caelestis corporis non sit ad aliquod ubi determinatum. . . . Dicitur tamen motus caelestis corporis naturalis, non propter principium actuum motus, sed propter ipsum mobile quod habet aptitudinem ut sic moueatur."

71. See *In De caelo* 1.3, 1.6, n. 13 (70), quoted in n. 69.

72. *In Met.* 5.4, 1. 5, n. 819: "motus rerum naturalium magis causatur ex forma quam ex materia."

73. CG 3.23 (Hoc autem): "unumquodque . . . agit vero et movet secundum quod est actu . . . ex ratione suae formae determinatur sibi [corpori gravi et levi] locus. Natura igitur corporis gravis et levis est *principium activum* motus eius." Cf. ST 1.25.1c: "Manifestum est enim quod unumquodque, secundum quod est actu et perfectum, secundum hoc est *principium activum* alicuius; patitur autem unumquodque, secundum quod est deficiens et imperfectum."

74. ST 1–2.6.5 ad 2: "Dicitur autem aliquid naturale dupliciter. Uno modo, quia est a natura sicut a principio activo, sicut calefacere est naturale igni. Alio modo, secundum principium passivum, quia scilicet est innata inclinatio ad recipiendum actionem a principio extrinseco; sicut motus caeli dicitur esse naturalis, propter aptitudinem naturalem caelestis corporis ad talem motum, licet movens sit voluntarium." See also above, n. 68: *susceptivum motionis alterius*.

75. *De pot.* 5.5c: "motus caeli non hoc modo est naturalis caelesti corpori sicut motus elementaris corporis est sibi naturalis; habet enim huiusmodi motus in mobili principium, non solum materiale et receptivum, sed etiam formale et activum. Formam enim ipsius elementaris corporis sequitur talis motus, sicut et aliae naturales proprietates ex essentialibus principiis consequuntur; unde in eis generans dicitur esse movens in quantum dat formam quam consequitur motus."

up and if nothing impedes.⁷⁶ In other words, the principle of motion in the heavy is 'formal' since natural fall is like a property consequent upon *form*.⁷⁷

Aquinas here, furthering a tack taken by Averroes,⁷⁸ applies a doctrine on the causality of necessary accidents⁷⁹ to his account of natural motion. According to him, properties are really distinct from and are caused to exist

76. *In Phys.* 2.1, l. 1, n. 4(144): "Et ideo dicendum est quod in rebus naturalibus eo modo est principium motus, quo eis motus convenit. Quibus ergo convenit movere, est in eis principium activum motus; quibus autem competit moveri, est in eis principium passivum, quod est materia. Quod quidem principium, in quantum habet potentiam naturalem ad talem formam et motum, facit esse motum naturalem. Et propter hoc factiones rerum artificialium non sunt naturales: quia licet principium materiale sit in eo quod fit, non tamen habet potentiam naturalem ad talem formam. Et sic etiam motus localis corporum caelestium est naturalis, licet sit a motore separato, in quantum in ipso corpore caeli est potentia naturalis ad talem motum. In corporibus vero gravibus et levibus est principium *formale* sui motus: quia sicut alia accidentia consequuntur formam substantialem, ita et locus, et per consequens moveri ad locum: non tamen ita quod forma naturalis sit motor, sed motor est generans, quod dat talem formam, ad quam talis motus consequitur."

After *sui motus*, the Leonine and Marietti editions, without basis in the manuscripts, record in parentheses the following interpolation, which Weisheipl has recognized as drawn from *In Met.* 5.14, l. 14, n. 955 ("Concept," p. 19, n. 78; see above, n. 45): "sed huiusmodi principium formale non potest dici potentia activa, ad quam pertinet motus iste, sed comprehenditur sub potentia passiva: gravitas enim in terra non est principium ut moveat, sed magis ut moveatur."

77. In addition to the previous two notes, see *De motu cordis*, ll. 118–21: "motus sursum est naturalis ignis eo quod consequitur formam eius; unde et generans quod dat formam est per se mouens secundum locum." See also *In Met.* 5.12, l. 14, n. 955, where Aquinas describes a formal principle as that "*ad quod consequitur motus*, sicut ad formam gravis vel levis *sequitur* motus sursum aut deorsum" (quoted in n. 45). Cf. *In De caelo* 1.3, l. 6, n. 13 (70), quoted in n. 69; *De ver.* 24.1c; CG 2.47 (Amplius Principium).

78. Aquinas himself reports, "sicut ipse [Averroes] dicit in commento suo in hoc loco, motor gravium et levium est generans, qui, dum dat formam, ex consequenti dat motum naturalem, sicut et omnia accidentia naturalia quae consequuntur formam: et sic generans causat motum naturalem mediante forma;" *In De caelo* 3.2, l. 7, n. 8 (593), referring to Averroes's *In De caelo* 3.2, t.28, f. 198H–I. For Averroes's doctrine, see also the following: "hoc, quod moventur in loco, provenit eis a generante, sicut provenit qualitas propria, /B/ et alia accidentia;" *In Phys.* 8.4 (255a30–b31), t. 32, f. 370A–B. "Generans enim est illud, quod dat corpori simplici generato formam suam, et omnia accidentia contingentia formae: quorum unum est motus in loco" (f. 370G); "causa in hoc, quod moventur ad loca opposita, scilicet grave, et leve, est quia sunt nata ut sint in locis propriis, scilicet quod esse eorum non completur, nisi essendo in illis locis, sicut complentur alia accidentia, et propria sequentia substantiam uniuscuiusque eorum" (f.371D; cf. f. 371A–C; *In De caelo* 4.3, t.22, f. 249B–C).

The sole basis in Aristotle for this doctrine is his reference to οἰκείοι τόποι in *Phys.* 8.4 (255a3–4). Albert also adopts Averroes's doctrine (*Physica* 8.2.4, p. 595.15–19; *De caelo* 3.1.7, p. 218.30–32; 4.2.1, p. 257.17–20). Maier, in "An der Grenze," pp. 152–53, 155, has recognized the distinctiveness of Averroes's doctrine and its importance for subsequent gravitational theory.

79. For Aquinas's doctrine, see Barry Brown, *Accidental Being: A Study in the Metaphysics of St. Thomas* (Lanham, Md./London, 1985), pp. 70–141.

by the subject in which they inhere—caused not, however, through the subject's matter but through its form.⁸⁰ An animal's powers, for example, as necessary accidents, 'flow' or 'emanate', maintains Thomas, from an animal's soul as from a 'principle' or 'agent' that is the 'active cause' 'productive' of them.⁸¹ At the same time, Aquinas describes the soul's essence as an 'active principle'⁸² and emphasizes that the powers flow from this principle without any 'transmutation' but simply as a 'natural result', much as color results from light.⁸³ In other words, for Aquinas, the soul's powers proceed from the soul's essence without the occurrence of any change that requires a mover but simply as a necessary consequence of that essence as an active principle.

I argue, then, that Aquinas calls nature as a principle of motion in the heavy and light 'active' in the same sense.⁸⁴ Just as a property follows upon substantial form, so downward fall follows necessarily upon the boulder's 'active principle', without the occurrence of any change that requires a special mover.⁸⁵ Motion, in other words, is simply a necessary consequence

80. *De ente et essentia* 6, ll. 59–72, in *Opera omnia*, vol. 43; CG 1.23 (Amplius. Omne); *De pot.* 7.4c.

81. ST 1.77.6c, ad 2–3; 1.77.7c, ad 1.

82. ST 1.77.6 ad 2: "subiectum est causa proprii accidentis et finalis, et quodammodo activa; et etiam ut materialis, inquantum est susceptivum accidentis. Et ex hoc potest accipi quod essentia animae est causa omnium potentiarum sicut finis et sicut principium activum; quarundam autem sicut susceptivum." See also ST 1.77.7c.

83. ST 1.77.6 ad 3: "emanatio propriorum accidentium a subiecto non est per aliquam transmutationem; sed per aliquam naturalem resultationem, sicut ex uno naturaliter aliud resultat, ut ex luce color;" cf. 1.77.7 ad 1. Aquinas is careful to describe the soul as an 'active principle' but not as an 'active power' or 'mover' of its own powers, a doctrine that would lead to an infinite regress. In one early text, however, Aquinas does refer to a subject as in a certain way (*quodammodo*) an 'active power' of its properties (*Super De trin.* 5.4 ad 4, ll. 282–84).

84. CG 3.23 (Amplius. Si): "Licet enim formae simplices [in elementis] non sint moventes, sunt tamen principia motuum, ad eas enim consequuntur motus naturales, sicut et omnes aliae naturales proprietates. Non autem potest esse quod motus caelestis sequatur formam caelestis corporis sicut principium activum." See also *De pot.* 5.5c, quoted in n. 75. Selvaggi has previously related Aquinas's explanation of natural motion to the discussion in ST 1.77 of the origin of the soul's powers; "Concetto," pp. 269–70, and *Cosmologia* (Rome, 1959), p. 219. But Selvaggi does not distinguish between 'active power' and 'active principle'; see below, n. 134.

85. Cf. SN 4.22.2.1c, where a link is made between 'that which holds itself actively to motion' and a 'perfecting principle of motion' not requiring the cooperation of any exterior agent, as in gravitational motion: "in quolibet sacramento fit quaedam promotio vel motus suscipientis ad aliquam sanctitatem. In motibus autem corporalibus quandoque illud quod movetur non cooperatur ad motum nisi recipiendo impressionem agentis tantum, sicut contingit in generatione, qua aliquid acquirit primam perfectionem sui esse, quae est etiam principium principium activum in ipso; et similiter etiam quando acquirit aliam perfectionem superadditam quae limites suae formae excedit; sicut cum paries depingitur, vel cum aer illuminatur. Quandoque autem perfectio prius suscepta est perficiens principium illius motus; et tunc operatur motum illum, sicut patet in motu naturali locali, et in

of heaviness as active when nothing hinders the boulder located outside its natural place. 'Possessing an active principle', then, is Aquinas's preferred description of bodies inclined to their motion by an interior source⁸⁶ *alone*,⁸⁷ as opposed to bodies that require a further exterior cause to be moved.⁸⁸ At the same time, Aquinas is quite clear that 'active principle', though it may *in itself* refer to an active power,⁸⁹ *when used of nature* does not

sanatione quae fit virtute naturae tantum. Quandoque autem perfectio habita non sufficit ad operandum effectum, sed cooperatur agenti exteriori, sicut patet cum ars naturam adjuvat. Et secundum hos tres modos etiam est motus ad sanctitatem. Unde in baptismo, qui est spiritualis vitae regeneratio, tota sanctificatio ex exteriori est; nec suscipiens sacramentum se habet *active* ad illam sanctificationem, sed ut recipiens tantum; unde signum sacramentale ibi est materia exterius apposita, non autem aliquis actus ex parte baptizati. Et similiter est in confirmatione, eucharistia, et extrema unctione, et ordine, quae ordinantur ad aliquam sanctitatem superadditam. Sed in promotione ad sanctitatem per viam merendi sufficit principium quod intus habetur, scilicet gratia. Et ideo sine aliquo exteriori adjuncto ad hanc promotionem habens gratiam per actus suos pertingit, quia in eo spiritualis vita est integra."

86. CG 4.97 (Non debet): "Non debet autem impossibile videri quod motus caeli cesset. Non enim motus caeli sic est naturalis sicut motus gravium et levium, ut ab aliquo interiori *activo principio* inclinetur ad motum: sed dicitur naturalis, inquantum habet in sua natura aptitudinem ad talem motum; principium autem illius motus est aliquis intellectus." Elsewhere, however, Aquinas uses '*aptitudo*' for '*inclinatio*' in this sense; CG 3.23 (Hoc autem); ST 1–2.6.5 ad 2; see nn. 66, 74.

87. CG 3.23 (Adhuc. Natura): "Si igitur motus caeli sit a natura tantum, esset ordinatus in aliquam quietem. Cuius contrarium apparet: cum sit continuus. Non est igitur motus caeli a natura sicut a *principio activo*, sed magis a substantia intelligente."

88. Cf. *In De caelo* 3.2, l. 7, n. 9 (594): "Quia id quod naturaliter movetur, habet sibi inditam virtutem, quae est principium motus: unde non oportet quod ab alio impellente moveatur, sicut id quod per violentiam movetur, quia nullam virtutem inditam habet, ad quam sequatur talis motus."

89. As the *Index thomisticus* indicates, the term, 'active principle' of itself is a genus that includes 'active power', that is 'a principle of acting on another' (cf. ST 1.25.1c; *In Met.* 9.1, l. 1, n. 1776). Accordingly, 'active principle' is often used of extrinsic movers, including the divine power (ST 1.4.1c; 1.14.11c; 1.44.2 ad 2; even of the source of processions within the Trinity, in ST 1.41.3 ad 2); the causes of substantial change [CG 3.23 (Non tamen); *In Met.* 7.9, l. 8, n. 1457]; and the causes of accidental change, such as the doctor's or the teacher's science [CG 2.75 (Sciendum tamen)]. Similarly, 'active principle' is also used of intrinsic *moving* causes, including the soul itself [*In De caelo* 1.2, l. 3, n. 4 (22); 2.2, l. 2, n. 6 (305)]; the generative power of semen (for example, *In Met.* 7.9, l. 8, n. 1442ε); and the active powers of the soul, whether nutritive [CG 2.76 (Item. In); 2.89 (Primo itaque)] and locomotive [CG 3.10 (In actionibus)], or appetitive [CG 3.56 (Amplius. Nulla); ST 1–2.72.3 ad 1] and intellectual (ST 1–2.51.2c), and their principles: logical premises (SN 1.17.1.3c; ST 1–2.54.2 ad 3; 2–2.98.1 ad 2), including natural laws (ST 1–2.93.5 ad 1), or ends of action (ST 1–2.54.2 ad 3). For Thomas, however, nature as an intrinsic per se principle of motion cannot be a moving cause (see above, nn. 45–46). Hence, Aquinas never describes nature as an 'active power' but only as an 'active principle' since this term alone is generic enough not to refer only to movers.

refer to a mover.⁹⁰ Nature is called 'active principle', explains the *De caelo* commentary, contrary to Averroes, not as a mover or as an agent is active but as an instrument is active,⁹¹ determining the action of its agent, just as color is the 'active' instrument of light in vision.⁹² The boulder's form of heaviness, therefore, is not a mover but is a 'principle with which' (*quo*) the boulder is moved, that is, an active principle.⁹³

D.

Given the distinction between nature as an active-formal versus a passive-material principle, I turn to the fourth element, which has three stages: 'active nature' as an accidental characteristic is both (1) in act and (2) in potency, and therefore (3) Aquinas's conception of it differs from

90. CG 3.23 (Amplius. Si), quoted in n. 84. Although only here and in the text of the following note does Aquinas deny that nature *as an active principle* is a mover, the same point may be inferred from many passages. See below, n. 133.

91. In *De caelo* 3.2, l. 7, n. 9 (594): "Existimavit enim [Averroes] quod forma corporis gravis et levis sit *principium activum* motus per modum moventis, ut sic oporteat esse aliquam resistantiam ad inclinationem formae; et quod motus non procedat immediate a generante qui dat formam. Sed hoc est omnino falsum. Nam forma gravis et levis non est principium motus sicut agens motum, sed sicut quo movens movet; sicut color est principium visionis, quo aliquid videtur. Unde et Aristoteles dicit in 8 *Physicorum*, post ea quae dixerat de motu gravium et levium: quod quidem igitur nihil horum movet seipsum manifestum est: sed motus habent principium, non movendi neque faciendi, sed patiendi. Sic igitur motus gravium et levium non procedit a generante mediante alio principio movente; neque etiam oportet aliam resistantiam quaerere in hoc motu, quam illam quae est inter generans et genitum. Et sic relinquitur quod aër non requiratur ad motum naturalem ex necessitate, sicut in motu violento. Quia id quod naturaliter movetur, habet sibi *inditam virtutem*, quae est principium motus: unde non oportet quod ab alio impellente moveatur, sicut id quod per violentiam movetur, quia nullam virtutem inditam habet, ad quam sequatur talis motus."

92. On this analogy, cf. SN 3.14.1.2c: "Sicut autem in sensu visus est duplex activum: unum quasi primum agens et movens, sicut lux; aliud quasi movens motum, sicut color factus visibilis actu per lucem; ita in intellectu est quasi primum agens lumen intellectus agentis; et quasi movens motum, species per ipsum facta intelligibilis actu." Cf. also ST 1.77.3c, 1.105.3c, 1-2.9.1c, 1-2.10.2c.

93. In addition to *In De caelo* 3.2, l. 7, n. 9 (594), see *De ver.* 22.3c, ll. 58-79: "Res enim spirituales absolute habent naturam ut moveant sed non ut moveantur; corpora autem moventur quidem, et quamvis unum possit alterum movere non tamen aliquod eorum potest movere se ipsum, quia illa quae movent se ipsa, ut probatur in 8 *Physicorum*, dividuntur in duas partes quarum una est movens et alia mota. Quod quidem in rebus pure corporalibus esse non potest, quia formae eorum non possunt esse moventes, quamvis possint esse *motus principium ut quo aliquid movetur*, sicut in motu terrae gravitas est principium quo movetur non tamen est motor. Et hoc contingit tum propter simplicitatem corporum inanimatorum quae non habent tantam diversitatem in partibus ut una pars possit esse movens et

Weisheipl's. It is clear by now that nature as formal and active is not merely an indeterminate *potency*, as is nature as material and passive. Nature's formal and active character comes precisely from the fact that it is partially in act.⁹⁴ Accordingly, Aquinas speaks of such nature as a *virtus*⁹⁵ or a *vis*,⁹⁶ that is, as an actual characteristic of certain bodies distinct from their substantial form.⁹⁷ In the case of elemental bodies, Aquinas calls that characteristic *gravitas* or *levitas*, an inclination 'superadded to their essence',⁹⁸ which, he insists, is no less accidental to the elements than is heat or cold.⁹⁹ In fact, heaviness and lightness are one of Aristotle's own major examples of the category of quality.¹⁰⁰ Aquinas identifies these as exemplifying the category's third species, 'passive quality', that is, that with respect to which mobile substances are altered.¹⁰¹ Accordingly, he

alia mota, tum etiam propter ignobilitatem et materialitatem formarum quae, quia longe distant a formis separatis quarum est movere, non retinent ut movere possint sed solum ut sint motus principia."

94. See above, n. 73.

95. In *De caelo* 3.2, l. 7, n. 9 (594), quoted in n. 91; *De pot.* 3.7c, quoted in n. 141. Cf. Aquinas's definition of *virtus* in the sense of an intrinsic potency consequent upon form: "hoc enim dicimus potentiam principium intrinsecum quo agens agit vel patiens patitur. Haec quidem potentia, secundum quod refertur ad ultimum in quod aliquid potest, accipit nomen et rationem virtutis. Huiusmodi autem virtus quae est talium actionum vel passionum principium, manifeste ostenditur ex forma rei specifica derivari; omne enim accidens quod est proprium alicuius speciei derivatur ex principiis essentialibus illius speciei" (*De operationibus occultis naturae*, ll. 106–11, in *Opera omnia*, vol. 43).

96. CG 3.23 (Amplius. Si), quoted in n. 58. Cf. Aquinas's definition of *vis*: "virtus, secundum sui nominis rationem, potentiae complementum designat; unde et vis dicitur, secundum quod res aliqua per potestatem completam quam habet, potest sequi suum impetum vel motum . . . unde Philosophus dicit in 1 *Caeli et Mundi*, quod virtus est ultimum in re de potentia" (*De virtutibus in communi* 1.1c, in *Quaestiones disputatae*, vol. 2).

97. In addition to the arguments for this distinction already referred to (see above, nn. 47–48), we may add one here drawn from Thomas's theology of the Lord's supper. The heaviness of bread and wine is among the other accidents that continue to be present there even without its substantial form. See ST 1.75.5, 1.77.1–3.

98. ST 1.59.2c: "Unde videmus in corporibus naturalibus quod inclinatio quae est ad esse rei, non est per aliquid superadditum essentiae, sed per materiam, quae appetit esse antequam habeat, et per formam, quae tenet rem in esse postquam fuerit. Sed inclinatio ad aliquid extrinsecum est per aliquid essentiae superadditum; sicut inclinatio ad locum est per gravitatem vel levitatem."

99. SN 2.14.1.5 ad 2: "sicut calor et frigus non sunt formae substantiales elementorum, ita nec gravitas et levitas; quia non possent esse aliis corporibus accidentales. Unde sicut substantia non est principium alterationis nisi mediante calore vel frigore, ita nec est principium motus vel quietis localis nisi mediante gravitate et levitate."

100. *Met.* Δ.14 (1020b8–12, b17–18).

101. In *Met.* 5.14, l. 16, n. 993; cf. Aristotle, *Categoriae*, ed. L. Minio-Paluello (Oxford, 1949), 8 (9a36–10a10). Heaviness and lightness are not 'passive' in the

elsewhere includes gravity and levity in his list of the active and passive *qualities* of the elements.¹⁰²

'Nature as active', then, is a kind of quality that actualizes certain substances, as in the case of heaviness or lightness. At the same time, of course, such nature, as a principle of motion, is still a *potency* for further motion and for a determinate end of that motion,¹⁰³ as the terms *virtus* and *vis* continue to indicate. Heaviness and lightness are of themselves potencies awaiting further actualization, namely, to be up or down.¹⁰⁴ Hence, we may conclude, active-formal nature refers to a quality that actualizes a substance to be in potency for some further determinate act. For Aquinas, this is partly why Aristotle's discussion of natural fall appeals to the distinction between first and second actuality, between, for example, the grammarian's habitual knowledge and the exercise of that knowledge.¹⁰⁵ The student, explains Aquinas, even once having been led through the action of a teacher from first potency to first act, comes thereby to possess yet another potency, a potency for actually using the new grammatical knowledge; that is, the student comes to possess an 'act that is still in potency'.¹⁰⁶

sense of being productive of sensations but of being the result of a qualitative change. Hence, heaviness and lightness as 'passive' are not being considered as principles of local motion but as terms of alteration, as when water evaporated by the sun becomes air that is light. Cf. Aristotle, *Phys.* 8.4 (255b5–13).

102. CG 2.68 (Invenimus enim); SN 2.14.1.5c. Thus, also, iron has a *quality* of being moved to a magnet; see above, n. 61.

103. See above, nn. 42 and 45. According to ST 1–2.10.1 ad 2, natural rise and fall, as actualizations of what is in potency, are not merely consequents of form but also of matter: "in rebus naturalibus id quod est naturale quasi consequens formam tantum, semper actu inest, sicut calidum igni. Quod autem est naturale sicut consequens materiam, non semper actu inest sed quandoque secundum potentiam tantum. Nam forma est actus, materia vero potentia. 'Motus autem est actus existentis in potentia.' Et ideo illa quae pertinent ad motum, vel quae sequuntur motum in rebus naturalibus, non semper insunt, sicut ignis non semper movetur sursum, sed quando est extra locum suum." Cf. *Quaestiones disputatae de malo* 5.5c, in *Opera omnia*, vol. 23.

104. *In Phys.* 8.4, l. 8, n. 5 (1033): "Haec ergo, scilicet aqua, primo est in potentia levis, et postmodum [qua aër] fit levis in actu; et tunc statim habet operationem suam, nisi aliquid prohibeat. Sed iam levis existens comparatur ad locum sicut potentia ad actum (actus enim levis, in quantum huiusmodi, est esse in aliquo loco determinato, scilicet sursum): sed prohibetur ne sit sursum, per hoc quod est in contrario loco, scilicet deorsum, quia non potest esse simul in duobus locis." See also n. 7 (1035), quoted below, n. 131. Cf. *In Met.* 5.4, l. 5, n. 826 (below, n. 110).

105. Aristotle, *Phys.* 8.4(255a33–b13). Cf. *De anima* 2.5 (417a21–30).

106. *In Phys.* 8.4, l. 8, n. 3 (1031): "Ex prima autem potentia in secundam reducitur aliquid, cum activum suo passivo coniungitur; et tunc passivum per praesentiam activi fit *in tali actu, qui adhuc est in potentia*; sicut addiscens per actionem docentis reducitur de potentia in *actum, cui actui coniungitur altera potentia*. Et sic existens in prima potentia, fit in alia potentia: quia iam habens scientiam, sed non considerans, quodammodo est in potentia ad actum scientiae, sed non eodem modo, sicut antequam addisceret. Ergo de prima potentia reducitur in *actum cui coniungitur secunda potentia*, per aliquod agens."

Similarly, the boulder has a first actuality, an accidental quality or 'nature', not possessed by the heavens, namely, heaviness, which actualizes the 'first potency' of matter. Nevertheless, heaviness is still only a potency to a second act until the boulder falls.¹⁰⁷ Heaviness, in Aquinas's terms, is a first act 'to which is adjoined a second potency', namely, to actually being down.

Given that nature as an active-formal principle is a quality in potency to further act, it is important to reemphasize that nature in this sense is, therefore, obviously distinct from nature as a substance's matter or form. In fact, the principle of natural motion is often referred to by Aquinas simply as 'form'.¹⁰⁸ Such instances should usually be understood to mean the *accidental* form through which the natural body is moved, like *gravitas* or *levitas*.¹⁰⁹ Occasionally, though, the form referred to can only mean substantial form.¹¹⁰ Nevertheless, even such references are perfectly consonant with Aquinas's doctrine on nature as an accidental quality since substantial form is the ultimate source of all the acts or motions stemming from a substance per se, just as prime matter is the ultimate source of all of a substance's natural passivities. For Thomas, no accident acts except through its substantial form.¹¹¹ At the same time, it is equally true for him that no created substantial form acts except through accidents.¹¹² Neither the sub-

107. See above, n. 104. According to ST 1.84.3, air only potentially rising is still 'light' only in potency and is not yet light in actuality (that is, is still in potency to *second* actuality).

108. In addition to the texts in the following two notes, see SN 2.14.1.3c, ad 1, and 3.22.3.2 sol. 1 (quoted in nn. 54, 56); CG 3.23 (Amplius. Si) (quoted in n. 58); *De pot.* 5.5c (above, n. 75); *De motu cordis*, ll. 118–21 (above, n. 77); ST 1.105.2c, 5c (below, n. 145).

109. See especially *indita virtus* in *In De caelo* 3.2, 1. 7, n. 9 (594) (quoted above, n. 91); *De ver.* 22.3c (above, n. 93); *In Met.* 5.12, l. 14, n. 955 (above, n. 45). Cf. SN 2.14.1.5 ad 2 (above, n. 99).

110. CG 4.35 (Amplius. Nomen *naturae*), quoted in n. 40; *In Phys.* 2.1, 1. 1, n. 4 (144), quoted in n. 76; CG 2.47 (Amplius. Principium); *In Met.* 5.4 (1015a13–19), l. 5, n. 826: "primo et proprie natura dicitur substantia", idest forma rerum habentium in se principium motus inquantum huiusmodi. Materia enim dicitur esse natura, quia est formae susceptibilis. Et generationes habent nomen naturae, quia sunt motus procedentes a forma, et iterum ad formas. Et 'idipsum', scilicet forma est principium motus rerum existentium secundum naturam, aut in actu, aut in potentia. Forma enim non semper facit motum in actu, sed quandoque in potentia tantum: sicut quandoque impeditur motus naturalis ab aliquo exteriori prohibente, vel etiam quando impeditur actio naturalis ex materiae defectu."

111. ST 1.77.1 ad 4: "hoc ipsum quod forma accidentalis est actionis principium, habet a forma substantiali. Et ideo forma substantialis est primum actionis principium, sed non proximum. Et secundum hoc Philosophus dicit quod id 'quo intelligimus et sentimus, est anima'; cf. 1.77.5 ad 1. *In Met.* 7.9, l. 8, n. 1457: "Qualitates etiam activae, licet sint activae, non tamen agunt solum in virtute propria, sed in virtute formarum substantialium ad quae se habent sicut instrumenta; sicut dicitur in secundo *De anima*, quod calor ignis est sicut instrumentum animae nutritivae." SN 1.3.4.2 ad 2: "essentia ipsius animae est etiam principium operandi, sed mediante virtute."

112. "In omnibus autem aliis [Deo] operatio est accidens: et ideo oportet quod proximum principium operationis sit accidens, sicut videmus in corporibus quod

stantial form nor the prime matter is the proximate principle of natural motions, but such motions always occur through the mediation of an accidental principle, nature as active or passive.¹¹³

Weisheipl's difficulties, I argue, stem ultimately from equating, as principles of motion, nature as substantial form and 'nature as formal and active'.¹¹⁴ Precisely because Weisheipl tends to identify active-formal nature with substantial form, he thinks of such nature as wholly in act. As such, it can be conceived as spontaneously acting and moving without need of a mover.¹¹⁵ Weisheipl's principal evidence for this interpretation lies in Aquinas's discussion of natural rise and fall as a second actuality.¹¹⁶ As soon as air comes to exist, maintains Thomas, it 'immediately operates' through its own nature, just as does the educated student, who now can think of grammar independently of any teacher teaching.¹¹⁷ Thus, for Weisheipl, when air rises, its active nature spontaneously 'acts' or 'moves of itself' independently of any cause.

forma substantialis ignis nullam operationem habet, nisi mediantibus qualitatibus activis et passivis, quae sunt quasi virtutes et potentiae ipsius" (SN 1.3.4.2c). Otherwise, a creature's act would be its essence, so that the creature would always be acting, and it would have only one action (cf. ST 1.77.1c; 1.54.1, 3c); air, for example, would always be up (cf. ST 1.59.2c).

113. SN 2.14.1.5 ad 2, quoted in n. 99.

114. "Concept," p. 12: "nature as an *active* and spontaneous principle . . . [for Aristotle] properly applies to 'form'; if the term is applied to 'matter,' it connotes passivity . . . in scholastic terminology nature as 'matter' is equivalent to *principium passivum*, *receptivum*, and *materiale*; while nature as 'form' is equivalent to *principium activum*, or *formale*." "Interpretation," p. 525: "the word 'nature' can be used in two senses: in the active sense of 'form' as a formal principle (ut principium formale seu activum) or in the passive sense of 'matter' as a material principle (ut principium materiale seu passivum). Therefore the natural philosopher must study both the active principle (form) and the passive principle (matter) of all natural things." "Aristotle's Concept," pp. 144–45: "all these phenomena we call 'natural' in the universe can be traced back to some ultimate and primary principle we call the 'form' of the thing, the 'nature' of the thing. This 'form' is an active, dynamic *source* of what is actually observed in human experience Thus for Aristotle the word 'nature' can be used in two senses. In the sense of 'form', it is active, dynamic, and spontaneous;" cf. p. 141. In speaking of the substantial form as a principle of motion ("Aristotle's Concept," p. 153), Weisheipl fails to use the distinction, which he does occasionally acknowledge (see p. 145; "Concept," p. 12), between substantial form and its mediating accidents. For this failure, see especially the texts cited above, n. 10.

115. "Nature as form simply acts spontaneously whether there is a resisting medium or not" ("Aristotle's Concept," p. 148).

116. In addition to the texts cited above, n. 10, see "Specter," pp. 112–13; "Principle *Omne quod movetur*," p. 90; "Aristotle's Concept," p. 148.

117. "Statim habet operationem suam;" *In Phys.* 8.4.1. 8, n. 5 (1033), quoted above, n. 104. Aquinas thus applies to air his account of the student who possesses the first actuality of knowledge [n. 3 (1031)]: "Sed quando sic se habet quod habet habitum scientiae, non oportet quod reducat in secundum actum per aliquod agens, sed *statim per seipsum operatur* considerando, nisi sit aliquid prohibens, puta occupatio vel infirmitas aut voluntas." See also Aquinas's ambiguous formulation in CG 2.74 (Item. Postea).

Now, Weisheipl has well brought out the fact that, for Aquinas, nature as an active principle, as we have seen, requires no further mover in order that natural motion occur. This is precisely what, for Thomas, Aristotle's distinction between first and second actuality is principally intended to indicate: what possesses a second potency does not require the action of an agent other than the source of its first actuality in order to be 'reduced' to second act. Furthermore, Weisheipl is correct that, for Thomas, nature as active produces its own act and can even be said, in a sense, 'to act' in the active voice, as we shall see.¹¹⁸

But Weisheipl does not do justice, I argue, to the passive character of 'nature as an active principle of motion',¹¹⁹ to the fact, that is, that the boulder's heaviness must first be seen as a passive principle and can then be understood as an active-formal kind of passive principle.¹²⁰ In fact, the boulder's nature, precisely insofar as it is a 'second potency', is a passive potency and, like all 'second potencies', requires an agent in order to be actualized. In the same way, for Aquinas, habits in the intellect or will are reduced into second act only through the causation of an agent¹²¹—even though as first actualities they require no new per se agent in order to be exercised. Consequently, even where Aquinas stresses, in *De veritate* 22.1c, that what has nature as an active principle 'acts' in the active voice, he also affirms that it undergoes motion or 'is moved' in the passive voice. Aquinas, having spoken of the boulder's natural inclination provided to it by its generator, writes,

And, in this way, all natural things are inclined to what is fitting for them, possessing within themselves some principle of their inclination. In virtue of this principle, their inclination is natural, so that, in a certain way, they themselves 'go to' and are not merely 'led to' their due ends. For, things resulting from violence are only 'led', since they contribute nothing to what moves them; but natural things also 'go to' [their] ends insofar as they cooperate with what inclines and directs them through the principle placed within them.¹²²

118. In addition to the text quoted in the following paragraph, see *operatur* in SN 4.22.2.1c (quoted in n. 85). For the statement that *operatio* belongs to passive as well as to active powers, see *De ver.* 16.1 ad 13.

119. See above, nn. 42 and 43.

120. *In Met.* 5.12, 1. 14, n. 955, quoted in n. 45.

121. For the mover of intellect and will, see ST 1–2.9.1, 3–6. Cf. *De unione* 5c: "si virtus quae est actionis principium, ab alia superiori virtute moveatur, operatio ab ipsa procedens non solum est actio, sed etiam passio; in quantum scilicet procedit a virtute quae a superiori movetur."

122. *De ver.* 22.1, ll. 169–78: "Et per hunc modum omnes res naturales in ea quae eis conveniunt sunt inclinata, habentia in se ipsis aliquod suae inclinationis principium, ratione cuius eorum inclinatio naturalis est, ita ut quodam modo ipsa vadant et non solum ducantur in fines debitos; violenta enim tantum modo ducuntur quia nihil conferunt moventi, sed naturalia etiam vadunt in fines, in quantum cooperantur inclinanti et dirigenti per principium eis inditum." I know of no parallels in Aquinas's later works to this bold description of nature as acting. But

According to this fourth doctrinal element, then, 'nature as active' is a quality of certain natural substances by which they are in potency for some further determinate act. We can now understand the status of such nature in relation to efficient causality. On the one hand, as Weisheipl has rightly emphasized, such a principle is not the mover of bodies like the heavy and the light. Aquinas repeatedly insists on this point, contrary to Averroes.¹²³ Otherwise, argues Thomas, the heavy and the light will not be moved by another, in violation of the principle *OQM*.¹²⁴ Such elements cannot be self-moved as are animals.¹²⁵ First, they do not have distinct parts moving and moved because of the simplicity of their bodies and the materiality of their forms.¹²⁶ Second, they are not alive, nor do they have in their control equally to move and to rest or to vary their direction.¹²⁷ Thomas concludes, following Aristotle's own formula in *Physics* 8.4, that nature even in this active sense is not a 'principle of moving or of acting but of undergoing'¹²⁸ or of being moved.¹²⁹

On the other hand, according to this same formula, 'active nature' in Aquinas is never properly 'agentless'. Only in Weisheipl does nature in the active sense refer to what simply moves and acts spontaneously. The boulder's heaviness, affirms Thomas, is a passive principle¹³⁰ that is a potency

compare ST 1.83.1c, where, again, both the active and passive voice are used: "quaedam agunt absque iudicio, sicut lapis movetur deorsum."

123. SN 2.14.1.3c, quoted in n. 56; *De ver.* 22.3c, above, n. 93; CG 3.23 (Amplius. Si), quoted in n. 58; *In Phys.* 2.1, 1. 1, n. 4 (144), quoted above, n. 76; *In Met.* 5.12, 1. 14, n. 955, above, n. 45; *In De caelo* 3.2, 1. 7, n. 9 (594), quoted in n. 91.

124. *In Met.* 5.12, 1. 14, n. 955, quoted in n. 45.

125. *In Met.* 5.12, 1. 14, n. 955. See also *In De caelo* 1.2, 1. 3, n. 4 (22), quoted in n. 130; ST 1.18.1 ad 2; 3.32.4c, below, n. 133.

126. *De ver.* 22.3c, quoted in n. 93. See also 24.1c; *In Phys.* 8.4, 1. 7, n. 8 (1028). Cf. CG 2.47 (Amplius. Principium), 2.68 (Invenimus enim); ST 1.115.3 ad 2. According to CG 3.23 (Item. Corpora), the form of the heavy and light cannot be a mover of matter since only bodies are moved.

127. *In Phys.* 8.4, 1. 7, nn. 6–7 (1026–27).

128. *In Phys.* 8.4 (255b29–31), 1. 8, n. 7 (1035), quoted in n. 131; *In De caelo* 1.2, 1. 3, n. 4 (22), quoted in n. 130; 3.2, 1. 7, n. 9 (594), quoted in n. 91.

129. "Principium ut moveatur" (*In Met.* 5.12, 1. 14, n. 955; see also the text in the following note).

130. In addition to the texts in the following note and in n. 133, see *In De caelo* 1.2, 1. 3, n. 4 (22): "duplex est principium motus: unum quidem activum, quod est ipse motor, et tale principium motus animalium est anima: aliud autem est principium motus passivum, scilicet secundum quod corpus habet aptitudinem ut sic moveatur, et huiusmodi principium motus est in gravibus et levibus. Non enim componuntur ex movente et moto, ut Philosophus dicit in 8 *Physicorum*: quod quidem, inquit, nihil horum, scilicet gravium et levium, ipsum movet seipsum, manifestum est: sed motus habent principium, non movendi neque faciendi, sed patiendi. Sic igitur dicendum est quod principium activum motus caelestium corporum est intellectualis substantia: principium autem passivum est natura illius corporis, secundum quam natum est tali motu moveri. Et esset simile in nobis si anima non moveret corpus nostrum nisi secundum naturalem inclinationem eius, scilicet deorsum." Cf. also *In Phys.* 2.1, 1. 1, n. 4 (144), quoted above, n. 76.

for further act.¹³¹ Nature as an 'active principle', in other words, is fundamentally a passive potency rather than an active power.¹³² In fact, Thomas occasionally will even deny that heaviness and lightness are 'active principles' at all, namely, in the sense of active powers.¹³³ For him, a boulder's heaviness is 'active' or 'acts', again, not as does an agent but as does an instrument, mediating the action of a prior agent.¹³⁴ But on what agent does the boulder depend for its free fall?

131. *In Phys.* 8.4, l. 8, n. 7 (1035): "Concludit [Aristoteles] igitur manifestum esse ex dictis, quod nihil horum, scilicet gravium et levium, movet seipsum: sed tamen motus eorum est naturalis, quia habent principium motus in seipsis; non quidem principium motivum aut activum, sed principium passivum, quod est potentia ad talem actum. Ex quo patet contra intentionem philosophi esse, quod in materia sit principium activum, quod quidam dicunt esse necessarium ad hoc quod sit motus naturalis: sufficit enim ad hoc passivum principium, quod est potentia naturalis ad actum."

132. *In Met.* 5.12, l. 14, n. 955; quoted in n. 45.

133. In addition to *In Phys.* 8.4, l. 8, n. 7 (1035), in n. 131 above, see the following three texts. *In De caelo* 2.2, l. 2, n. 6 (305): "in corporibus animatis est principium activum motus, quod est anima: in corporibus autem inanimatis non est principium motus activum, quod scilicet moveat, sed moventur ab exteriori movente, quod est generans vel removens prohibens. Interius autem habent principium motus passivum, quo scilicet nata sunt moveri, puta gravitatem vel levitatem, ut patet in 8 *Physicorum*." *In De caelo* 2.2, l. 3, n. 2 (314): "[corpora inanimata] non habent in se principium activum motus, sed solum passivum, ut dicitur in 8 *Physicorum*." ST 3.32.4c: "transmutatio dicitur naturalis propter principium intrinsecum non solum activum, sed etiam passivum; expresse enim dicit Philosophus in 8 *Physicorum*, quod in gravibus et levibus est principium passivum motus naturalis, et non activum. Nec est possibile quod materia agat ad sui formationem, quia non est actu. Nec est etiam possibile quod aliquid moveat seipsum, nisi dividatur in duas partes, quarum una sit movens et alia sit mota, quod in solis animatis contingit, ut probatur, 8 *Physicorum*."

134. *In De caelo* 3.2, l. 7, n. 9 (594), quoted in n. 91. Selvaggi, in "Concetto," pp. 260–66, finds an apparent contradiction in Aquinas's repeated insistence that nature is only a passive principle and is sometimes also an active principle. He resolves the problem by positing an evolution in Aquinas's doctrine, although not a radical one, as well as a degree of uncertainty, imprecision, and incompleteness in Aquinas's scattered discussions (pp. 266, 276; cf. p. 270). For Selvaggi (p. 268), Aquinas's authentic teaching is consistently that nature is the heavy and light is an *active power*. By the 'passivity' of such bodies Aquinas refers only to (a) the fact that heaviness 'acts' as a formal rather than as an efficient cause and lacks the self-determination and autonomy found in animate efficient causes; or (b) to the fact that heaviness, even as a true efficient cause, is only an instrumental cause of the body's past generator (pp. 269–74; cf. *Cosmologia*, p. 219). Selvaggi's problem disappears, I maintain, once the term 'active principle' is properly understood since, as we have seen, the term is neither equated with 'active power' nor opposed to 'passive potency'. In fact, contra Selvaggi ("Concetto," pp. 267–68), the affirmation of *In Phys.* 2.1, l. 1, n. 4 (144), that active-formal nature is a passive potency, far from being a mere self-contradictory interpolation, is actually Aquinas's authentic teaching. See above, n. 76.

E.

At this point one may rightly wonder, even admitting that nature as an active principle is a passive potency, why Aquinas therefore needs to regard nature as requiring an agent at all. Why cannot some secondary potencies, for Thomas, simply actualize of themselves, as Weisheipl holds, so that, for example, natural rise and fall occur spontaneously, without any moving cause? The answer constitutes the fifth element of Aquinas's doctrine.

For Aquinas, to say that a potency actualizes of itself is equivalent to saying that a potency acts.¹³⁵ But two reasons can be found in Thomas why passive potency of itself cannot act. First, that which is in potency *as in potency* does not yet exist, but what does not exist cannot act.¹³⁶ Second, nothing acts except insofar as it is in act.¹³⁷ Hence, if potency acts, it must be in act. But nothing is simultaneously both in potency and in act.¹³⁸ It follows, therefore, that every passive potency as such requires something distinct from it in act in order that it be reduced into act.

These two reasons indicate, then, why nature as a principle of motion, insofar as it is fundamentally a passive potency, requires a distinct agent in order to be actualized. Even nature as an active principle in the heavy and light cannot act of itself spontaneously without a distinct moving cause. On the same grounds, it is clear why, for Thomas, unlike for Weisheipl, the

135. CG 1.16 (Item. Videmus). Cf. Aristotle's expression in *Phys.* 8.4 (255b10); *Met.* K.9 (1065b21–23).

136. "Item. Videmus aliquid esse in mundo quod exit de potentia in actum. Non autem educit se de potentia in actum: quia quod est potentia, nondum est; unde nec agere potest. Ergo oportet esse aliquid aliud prius, quo educatur de potentia in actum;" CG 1.16 (*quo* Leonine: *qui* Marietti). See my account of this argument in "Why Motion," pp. 250–51.

137. *In Phys.* 2.1, l. 1, n. 3 (143): "Dicunt ergo quidam quod etiam in huiusmodi mutationibus principium activum motus est in eo quod movetur; non quidem perfectum, sed imperfectum, quod coadiuvat actionem exterioris agentis. Dicunt enim quod in materia est quaedam inchoatio formae, quam dicunt esse privationem, quae est tertium principium naturae; et ab hoc principio intrinseco generationes et alterationes corporum simplicium naturales dicuntur. Sed hoc non potest esse: quia, cum nihil agat nisi secundum quod est in actu, praedicta inchoatio formae, cum non sit actus, sed aptitudo quaedam ad actum, non potest esse principium activum. Et praeterea, etiam si esset forma completa, non ageret in suum subiectum alterando ipsum: quia forma non agit, sed compositum; quod non potest seipsum alterare, nisi sint in eo duae partes, quarum una sit alterans et alia alterata." Note that 'active principle' here once again refers to an 'active power'; see above, n. 133. Aquinas has also once used the principle 'nothing acts except as in act' in presenting Aristotle's argument that everything moved is moved by another [CG 1.13 (Tertio, probat)].

138. If a potency were also in act, continues the *Physics* commentary, it would be divided into two parts, of which one moved the other. But, again, this is proper only to animate beings; see above, n. 125. Cf. the same reasoning in ST 3.32.4 (quoted in n. 133): matter cannot act for its own 'formation' since it is not in act, and only animate beings move themselves; hence, nature is a passive principle.

principle *OQM* applies to absolutely every motion—why even the boulder’s natural fall requires a distinct efficient cause. For every motion, including that of the heavy and light, involves the reduction of some potency into act. Furthermore, what is true at the outset of motion is equally true throughout the duration of any motion, whether natural or not, namely, that motion, as a reduction from potency into act, will require the constant exercise of a distinct agent. Consequently, Aquinas can say, “the coming to be of a thing cannot remain upon the cessation of the action of the agent that is the cause of the effect with respect to its coming to be.”¹³⁹

F.

A final question remains: if the boulder’s natural fall requires the constant exertion of an efficient cause, can such an extrinsic cause be found in Aquinas’s physics? Is Aquinas forced to affirm, after all, a conjoined mover that pushes the boulder down, the very cause that Weisheipl began by rejecting?¹⁴⁰ The sixth doctrinal element provides an answer that is negative. For Aquinas, as we have seen, there is no further efficient cause of the

139. “Fieri rei non potest remanere, cessante actione agentis quod est causa effectus secundum fieri” (ST 1.104.1c). Cf. CG 3.65 (Adhuc. Licet); *In Phys.* 2.3, l. 6, n. 9 (195); also SN 1.37.1.1 ad 3: “esse rei non potest conservari sine causa essendi, sicut nec motus sine causa movente.”

140. Aquinas himself never criticizes a theory of a *motor coniunctus* of natural bodies and never uses the term in discussing the heavy and light. His seven uses of the term all refer to a soul in its relation to its own body moved by it. Thus, according to the ‘philosophers’, the heavens are moved both by separate, final movers and by ‘conjoined’ movers, the souls of the spheres (SN 2.10.1.2c). This ‘conjoined mover’ is associated first with Avicenna (SN 2.14.1.3c), then with Averroes [*De spir. creat.* 6 ad 10; *In Phys.* 8.10, l. 21, n. 9 (1149)]. Aquinas himself insists that motion by a ‘conjoined mover’ is proper to life and therefore does not belong to the bodies that angels assume in communicating with humans since angels are not the forms of such bodies (ST 1.51.3 ad 3). He usually prefers not to attribute to the heavens a conjoined mover in this sense, as a form of the celestial body (*De ver.* 5.9 ad 14; *De pot.* 6.6 ad 9; but cf. *Quaestiones de anima* 8 ad 3, in *Quaestiones disputatae*, vol. 2).

The term *motor coniunctus*, thus, is more precise than the term *coniungitur* since Aquinas will say that, in a broad sense, every agent touches (*contingit*) or is in contact (*coniungitur*) with what it moves, whether through corporeal-quantitative contact or through ‘virtual’ contact (ST 1.8.1c; 1.8.2 ad 1); cf. *In Phys.* 8.5, l. 11, n. 3 (1064). In the broad sense, even angels are said ‘to be conjoined to’ the bodies that they assume, conjoined not as their form but as their mover (SN 3.6.3.2c; cf. 2.31.2.1 ad 1), through the ‘contact of their power’ (ST 1.8.2 ad 2; 1.52.1c). In this sense, the human soul cannot be ‘conjoined’ to its body merely as mover to mobile [CG 2.57 (Amplius. Mobile)].

Ironically, Albert may have inspired Weisheipl’s injunction against a *motor coniunctus*. In *De caelo* 3.1.7, p. 218.7–25, Albert mentions *quidam* who think that natural motion is from a ‘conjoined mover’ that is never separated from its mobile. Consequently, they think air is unnecessary as a medium in the motion of the heavy and light. Yet, Albert’s point is not that a heavy body’s form is not its mover but that,

boulder's fall than that which originally 'generated' the boulder, giving to it its nature in the first place. Unlike 'passive nature', nature as active requires no further mover in order to be actualized. As long as there is no obstacle, natural motion simply follows necessarily upon a 'dislocated' boulder's 'active nature' as a proximate principle and upon its substantial form as a remote principle. At the same time, how can the causes that originally produced the boulder be regarded as actuating each of its subsequent downward falls even as they occur? In what proper sense can your parents, for Aquinas, be even now causing the continuous natural beating of your heart? In short, what cause concurrently reduces nature as an active principle from potency into act?

Without going into the details of Aquinas's cosmology here, an answer to this question may be sketched in light of the discussion of causality in *Summa theologiae* 1.104–5. First, it is clear that, for Thomas, the 'mover' in the case of 'active nature' is of a special kind: rather than acting anew in each natural motion, it moves, as we have seen, simply by giving the form that is the principle of that motion.¹⁴¹ At the same time, the 'generator', in the sense of the univocal cause of substantial change, like a parent,¹⁴² can be the *per se* cause, I argue, only of those natural motions that occur immediately upon generation.¹⁴³ Such a terrestrial generator, according to Thomas, is the cause not of a given form *qua* that form but only of the

apparently, the form is a mover only by moving the air, which in turn carries the body (pp. 218.12–15, 218.87–219.18). This is Averroes's explanation; see above, nn. 55, 59. Cf. *Physica* 4.2.7, p. 248.33–92. Elsewhere, Albert accepts the view that the elements have a 'mover conjoined to' them, causing their natural motion (7.1.3, p. 523.52–59; cf. 522.21–25).

141. ST 1.105.3c: "in motibus corporalibus movens dicitur quod dat formam quae est principium motus." Cf. *De pot.* 3.7c: "actionis alicuius rei res alia potest dici causa multipliciter. Uno modo quia tribuit ei virtutem operandi; sicut dicitur in 4 *Physicorum*, quod generans movet grave et leve, in quantum dat virtutem per quam consequitur talis motus." For the doctrine that conservation is not a new action but is merely a continuation of a prior action, cf. ST 1.104.1 ad 4.

142. Aquinas uses the term *generans* only of univocal causes, and it is in this sense that Weisheipl understands it ("Principle *Omne quod movetur*," p. 92; "Specter," pp. 103, 108; so also Selvaggi: see above, n. 134). Aquinas does, however, say that equivocal causes 'generate' or 'cause generation'; see below, nn. 152, 156. Aristotle, of course, uses the term τὸ γεννητικόν of the heavenly bodies; *De generatione et corruptione* 2.10 (336a18–19), in *Aristotle on Coming-to-Be and Passing-Away*, ed. H. H. Joachim (Oxford, 1922); cf. 336b6–9. *Physics* 8.4 (256a1) applies almost the same term, τὸ γεννήσαν, to the *per se* mover of the heavy and light. At the same time, both terms normally do refer to a parent.

143. For motions caused immediately upon generation, see CG 3.84 (Adhuc. Propria); cf. ST 1.105.2c. In *De pot.* 3.11 ad 5, Aquinas admits that the univocal generator is understood to move the heavy and light as long as they retain the form generated by it. Nevertheless, I observe, this moving is not simultaneous with the motions caused and does not suffice for the production of these motions, as is clear in the example of projectiles, which are immediately moved by the medium through which they travel, for Aquinas as for Aristotle.

form's being acquired by this matter.¹⁴⁴ A terrestrial generator, then, is the cause only of a form's original coming to be and not of its continued existence. Only an equivocal cause of a given form as such could thereby be a cause of the continued *existence* that follows upon form: a *causa essendi* in that sense and not merely a *causa fiendi*. Therefore, only such a cause could be the per se mover of the heavy and light in all natural motions not simultaneous with their original generation.

For Aquinas, of course, God, through the divine ideas, is the cause of all created forms as such. It follows that God causes the actions of natural things not only by originally giving them their form and their subsequent natural powers, as does a terrestrial generator, but also by conserving these in existence.¹⁴⁵ In this sense, God, the primary mover of every motion, causes also 'in a most interior way' the operations of nature.¹⁴⁶ In other words, God as creator and conservator is also the immediate mover of the heavy and light, just as also of the human intellect and will.¹⁴⁷ Accordingly, Aquinas will speak of nature as an instrument of God¹⁴⁸ and as an impression within things of the divine art of governing itself.¹⁴⁹

At the same time, maintains Thomas, there exist even within the natural world itself equivocal causes of terrestrial forms as such, namely, the

144. ST 1.104.1c. Otherwise, Thomas argues, the generator would be the cause of its own form, a *causa sui*. See also *De substantiis separatis* 10, ll. 126–50, in *Opera omnia*, vol. 40. Cf. Aristotle, *Met.* Z.8 (1033b5–19).

145. ST 1.105.5c: "Unde non solum est [Deus] causa actionum in quantum dat formam quae est principium actionis, sicut generans dicitur esse causa motus gravium et levium; sed etiam sicut conservans formas et virtutes rerum; prout sol dicitur causa manifestationis colorum, in quantum dat et conservat lumen, quo manifestantur colores." Cf. *De pot.* 3.7c: "et hoc modo Deus agit omnes actiones naturae, quia dedit rebus naturalibus virtutes per quas agere possunt, non solum sicut generans virtutem tribuit gravi et levi, et eam ulterius non conservat, sed sicut continue tenens virtutem in esse, quia est causa virtutis collatae, non solum quantum ad fieri sicut generans, sed etiam quantum ad esse, ut sic possit dici Deus causa actionis in quantum causat et conservat virtutem naturalem in esse."

146. ST 1.105.5c.

147. Cf. ST 1.105.3; 1–2.9.4, 6. On the immediacy of God's causality, see *De pot.* 3.7c (ad fin.), ad 4; SN 2.1.1.4c. Note that God can also be said 'to move nature' in a way that is beyond nature; see SN 2.1.1.4 ad 3; ST 1.105.6 ad 1.

148. "Nam tota irrationalis natura comparatur ad Deum sicut instrumentum ad agens principale"; (ST 1–2.1.2c; quoted by Weisheipl, "Aristotle's Concept," p. 146, n. 29). See also CG 3.100 (Amplius. Omnes); *De pot.* 3.9 ad 21; ST 1–2.6.1 ad 3.

149. ST 1.103.1 ad 3: "necessitas naturalis inhaerens rebus quae determinantur ad unum, est impressio quaedam Dei dirigentis ad finem." *In Phys.* 2.8, l. 14, n. 8 (268): "natura nihil est aliud quam ratio cuiusdam artis, scilicet divinae, indita rebus, qua ipsae res moventur ad finem determinatum: sicut si artifex factor navis posset lignis tribuere, quod ex se ipsis moverentur ad navis formam inducendam." *In Met.* 12.10, l. 12, n. 2634: "Et ipsa natura uniuscuiusque est quaedam inclinatio indita ei a primo movente, ordinans ipsam in debitum finem."

150. ST 1.104.1c, 2c. On the heavens as exercising causality over entire species, see SN 2.1.1.4c; *De pot.* 3.7c; ST 1.13.5 ad 1. On the heavens as the source of

heavenly bodies, acting through their intellectual movers.¹⁵⁰ Through alterations in light and heat that they cause, they draw out, cooperating with terrestrial generators, the forms of all natural things from the potency of matter.¹⁵¹ Hence, Thomas frequently cites the Aristotelian tag: *homo generat hominem, et sol.*¹⁵² Furthermore, through their everlasting motion, the heavens cause the continuation of the entire generative process.¹⁵³ Accordingly, they are also said to conserve, albeit in a secondary way dependent on God as the principal agent, the *existence* of terrestrial substances. Consequently, for Thomas, on the heavens themselves, as on universal principles of nature,¹⁵⁴ depends the natural inclination of all terrestrial substances, and therefore also their natural motions, like the falling of water.¹⁵⁵

Even without resorting to the first cause, then, Thomas holds that there is in nature itself a universal cause of all terrestrial motion.¹⁵⁶ This explains

substantial form through their movers, see SN 2.15.1.2c; *De ver.* 5.10 ad 4; CG 3.23 (Nihil enim); *De malo* 5.5 ad 6. On the natures of things produced preexisting in the conceptions of the celestial intelligences, see CG 2.92 (Amplius. Sicut); *De oper. occult.*, ll. 161–69, 185–87; *In Met.* 12.7, l. 7, n. 2521. On celestial causality generally, see especially Thomas Litt, *Les corps célestes dans l'univers de saint Thomas d'Aquin* (Louvain/Paris, 1963), pp. 110–99.

151. Cf. ST 1.65.4; 1.67.3 ad 3, on light; SN 2.15.1.1; CG 3.82 (Adhuc. Sicut). Only in the case of the simplest forms do the heavens generate without univocal generators, presupposing for 'spontaneous generation' nothing but properly disposed matter. See, for example, CG 3.69 (In animalibus); ST 1.70.3 ad 3; 1.91.2; *In Met.* 7.9, l. 8, n. 1457.

152. See, for example, ST 1.115.3 ad 2: "quidquid in istis inferioribus corporibus generat, et movet ad speciem est sicut instrumentum caelestis corporis, secundum quod dicitur in 2 *Physicorum*," [2.2 (194b13)]. Litt, p. 275, n. 13, cites twenty-one parallels.

153. ST 1.104.2c; *De ver.* 5.9c; *De motu cordis*, ll. 170–74.

154. See ST 1–2.85.6c for the distinction between particular and universal nature: "Natura vero universalis est virtus activa in aliquo universali principio naturae, puta in aliquo caelestium corporum; vel alicuius superioris substantiae, secundum quod etiam Deus a quibusdam dicitur natura naturans."

155. According to ST 1.105.6 ad 1, since tidal motion is caused by the same agent on which depends the natural action of water, namely, the heavens, it is not contrary to but "praeter motum naturalem aquae, quae movetur deorsum; est enim ex impressione caelestis corporis, a quo dependet naturalis inclinatio inferiorum corporum."

156. CG 3.24 (Si autem): "Caelum autem est causa inferiorum motuum secundum suum motum, quo movetur a substantia intellectuali. . . . Sunt igitur formae et motus inferiorum corporum a substantia intellectuali causatae et intentae sicut a principali agente, a corpore vero caelesti sicut ab instrumento." CG 3.24 (Oportet autem): "Omnes igitur formae quae sunt in istis inferioribus, et omnes motus, derivantur a formis intellectualibus quae sunt in intellectu alicuius substantiae, vel aliquarum." CG 3.24 (Quia vero): "corpus autem caeleste causat per sui motum omnes motus in istis inferioribus." CG 3.82 (Adhuc. Sicut): "Oportet ergo quod caelum sit causa omnis motus in istis inferioribus corporibus." SN 2.15.1.2c: "dicendum est, corpora caelestia causare generationem et corruptionem in inferioribus, inquantum motus eorum est causa omnium inferiorum mutationum."

how Thomas can hold the following: that if and when the heavens cease to move, all corporeal things will be corrupted into their simplest elements, and these elements will remain absolutely motionless in their proper places.¹⁵⁷ In short, without the heavens' constant causation present to every motion,¹⁵⁸ no motion can occur. Not surprisingly, therefore, the heavens also cause all natural motion since they reduce nature as an active principle from potency to act by conserving the substantial form of natural bodies. At the same time, emphasizes Aquinas in an important text, we must avoid the impression that the form alone of such bodies, once possessed, suffices for motion to occur.¹⁵⁹ Instead, no matter how perfect that form is, it cannot proceed to its act, that is, it cannot be reduced from potency to act without being moved by the first corporeal mover, as well as by the absolutely first mover. Through the causality of the heavens and, ultimately, of the first cause, therefore, Aquinas finds the principle *OQM* to be fulfilled: everything being moved, including everything being naturally moved, must here and now be moved by another.¹⁶⁰

157. *De pot.* 5.7–9; *In De caelo* 2.3, l. 4, n. 13 (342).

158. Cf. *De pot.* 3.7c: "virtutem corporis caelestis oportet adesse cuilibet corpori elementari agenti." The heavens are present, of course, not through corporeal contact but through the contact of their power; see above, n. 140. In *De pot.* 3.7c, ad 2, however, Aquinas explains that although elementary bodies act by the power of the heavens, the heavens do not, properly speaking, act in *each* act of such bodies, as, for example, in chance or miraculous events.

159. ST 1–2.109.1c: "Videmus autem in corporalibus quod ad motum non solum requiritur ipsa forma quae est principium motus vel actionis; sed etiam requiritur motio primi moventis. Primum autem movens in ordine corporalium est corpus caeleste. Unde quantumcumque ignis habeat calorem perfectum, non alteraret nisi per motionem corporis caelestis. Manifestum est autem quod sicut motus omnes corporales reducuntur in motum caelestis corporis sicut in primum movens corporale; ita omnes motus tam corporales quam spirituales reducuntur in primum movens simpliciter quod est Deus. Et ideo quantumcumque natura aliqua corporalis vel spiritualis ponatur perfecta, non potest in suum actum procedere nisi moveatur a Deo. Quae quidem motio est secundum suae providentiae rationem; non secundum necessitatem naturae, sicut motio corporis caelestis. Non solum autem a Deo est omnis motio sicut a primo movente, sed etiam ab ipso est omnis formalis perfectio sicut a primo actu. Sic igitur actio intellectus et cuiuscumque entis creati dependet a Deo inquantum ad duo: uno modo, inquantum ab ipso habet perfectionem sive formam per quam agit; alio modo, inquantum ab ipso movetur ad agendum."

Although God and the heavens, then, move by conserving the existence of the formal cause through which motion occurs, it must not be forgotten that they truly are efficient causes. Cf. ST 1.105.5c.

160. At least one late thirteenth-century thinker presents extended reasoning that arrives at a conclusion similar to Aquinas's; see pp. 212–13 of William Wallace, "Gravitational Motion According to Theodoric of Freiburg," in *The Dignity of Science*, pp. 191–216. Godfrey of Fontaines intimates a similar conclusion; cf. Maier, "An der Grenze," p. 162.

III. RÉSUMÉ

Weisheipl's abiding contribution to the history of natural philosophy and science lies in his insistence that Aristotle's concept of form as the basis of intelligibility and identity in the real cannot be divorced from form as the basis of characteristic operations and changes. Yet, precisely how form is to be the source of the regular behavior even of inanimate bodies remains unclear in Aristotle. At any rate, Aristotle does not seem to have regarded the form as a direct moving cause in such bodies, as many scholastics held, and he sharply distinguishes animate self-motion from the motion of the heavy and light. Weisheipl has amply brought out this point and has shown how Aquinas appreciated it in developing an interpretation of nature in opposition to that familiar to the Arabic philosophers.

At the same time, I have argued, contrary to Weisheipl, that Aquinas does not conceive of form or nature as a spontaneous source of motions that are, properly speaking, 'mover-less' or 'causeless'. Such a conception would make natural rise and fall exceptions to the Aristotelian principle that every change requires a distinct moving cause. Precisely because of that principle, however, Aristotle had maintained that in absence of any other cause, only what makes the heavy and light in the first place can be their mover.¹⁶¹ Instead, Aquinas, seeking to be consistent with observation and with the principles of Aristotle's philosophy, conceives nature as an intrinsic quality of certain bodies that leads, without any new forces, to determinate motions and rests only under the influence of prior, universal efficient causes. To articulate such a conception, as I have shown, Aquinas develops a distinction, found verbally in Averroes, between 'nature as formal', referring to this intrinsic quality, and 'nature as material'. The latter refers to a characteristic of certain bodies by which they are predisposed to be regularly affected by new forces, but not in any determinate way. Thus, Aquinas distinguishes two kinds of 'natural motion', one based on nature as a formal principle and another based on nature as a material principle: within the same body of water, for example, gravitational motion versus tidal motion, or within the same animal, the heartbeat versus the use of the limbs.

When Aquinas speaks of nature as a formal and active principle, however, he does not mean that in certain bodies, the substantial form of itself simply moves or acts. First, nature as a principle of motion, whether 'formal' or 'material', principally refers, for him, not to substantial form or matter but to a passive potency for change, intrinsic to a body but really distinct from a body's substance. Second, precisely as a passive potency, a body's nature must be reduced into act by some distinct agent since no potency, as such, acts. It follows that even nature as an active-formal principle of

161. Aristotle, *Phys.* 8.4 (255b13–256a3). See also *De caelo* 4.3 (310a32–33, 311a10–12). Cf. *Aristotelis Meteorologicorum libri 4*, ed. F. H. Fobes (Cambridge, Mass., 1919), 1.2 (339a21–32).

motion, as in the heavy and light, requires a constant moving cause in order to be actualized. What is distinctive about such nature, however, is that it requires no new moving cause. Instead, such nature is 'active' in the sense that motion simply follows on it—again, Thomas's explanation follows Averroes's lead, as I have shown—just as a necessary property follows on substantial form. The only mover reducing the heavy and light from potency into act, then, is what gives them their 'active nature', their heaviness or lightness. I have argued, however, that even their 'generator' is their proper mover only immediately on their coming to be. Afterward, the *per se* mover of the heavy and light, in my reading of Aquinas, is what conserves their nature in existence, namely, the heavens and, primarily, God, their creator and prime mover.

This study thus reveals Aquinas's distinctive endeavor to explain adequately the regularity of new events in the world in absence of observed moving causes. He refuses to surrender the received view of Aristotle that such events cannot be unmoved and must not be self-moved, unless a moving organ can be discovered, as in animates. Instead, Aquinas understands such events to stem from a quality of bodies, 'nature as formal and active'. Nature in this sense, for him, as for Scotus, is partly in act and partly in potency.¹⁶² And yet, for Aquinas, nature as active is emphatically not a mover, as is nature for Avicenna.¹⁶³ Nor does it actualize or move itself, as for Scotus, even accidentally, as for Averroes and Albert. As six elements comprised in Aquinas's conception show, there is no 'causeless' motion for Thomas. But even nature as an active principle is fundamentally a passive potency and, as such, requires a constant moving cause: the heavens and God.

162. Cf. John Duns Scotus, *Quaestiones subtilissimae super libros Metaphysicorum Aristotelis* 9.14, in *Opera omnia*, ed. Vivès (Paris, 1891–1895), vol. 7, pp. 584–85. See Roy Effler, *John Duns Scotus and the Principle Omne quod movetur ab alio movetur* (St. Bonaventure, N.Y., 1962).

163. See *Tractatus primus de causis et principiis naturalium*, ed. S. Van Riet (Louvain-la-Neuve/Leiden, 1992), 5.110–22; cf. ll. 85–87. Avicenna follows a tradition that stems at least from the Greek commentators. See Alexander's position in *The Refutation of Alexander of Aphrodisius of Galen's Treatise on the Theory of Motion*, ed. N. Rescher and M. Marmura (Islamabad, 1967), p. 17, f. C67a17–20. Cf. J. E. McGuire, "Philoponus on *Physics* 2.1: Φύσις, Δύναμις, and the Motion of the Simple Bodies," *Ancient Philosophy* 5 (1985): 241–67; E. M. Macierowski and R. F. Hassing, "John Philoponus on Aristotle's Definition of Nature: A Translation from the Greek with Introduction and Notes," *Ancient Philosophy* 8 (1988): 73–100; Lang, *Aristotle's Physics*, pp. 16–17, 106–24.

